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THESIS

**AN ANALYSIS OF THE CIVILIAN EMPLOYEE REWARD
SYSTEM IN USE AT NAVAL AIR WARFARE CENTER,
PATUXENT RIVER, MARYLAND**

by

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December 1999

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AT NAVAL AIR WARFARE CENTER, PATUXENT RIVER, MARYLAND**

John F. Montgomery
Lieutenant, United States Navy
B.S., University of Arizona, 1993

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

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December 1999**

ABSTRACT

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I. INTRODUCTION

A. BACKGROUND

The Naval Air Warfare Center Aircraft Division (NAWCAD), headquartered at Patuxent River, MD is a full-spectrum research, development, test and evaluation (RDT&E), engineering, and fleet support center for air platforms. NAWCAD employs approximately 6,000 people at three sites: Lakehurst, NJ, Orlando, FL, and Patuxent River, MD. NAWCAD uses a Competency Aligned Organization/Integrated Program (CAO/IPT) structure. All capabilities and resources are categorized into seven core competencies:

- Competency One – Program Management. Supports project plannings and execution per customer requirements.
- Competency Two – Contracts. Acquires supplies, services, research and development as required by the NAWCAD and the team operating within the NAWCAD.
- Competency Three – Logistics. Develops, plans and integrates support considerations into product designs.
- Competency Four – Research and Engineering. Executes the research and engineering aspects of technology development, systems acquisition and product support of assigned naval aviation systems.
- Competency Five – Test and Evaluation. Provides support in the development and fielding of aviation vehicles, weapons systems and related products for the Operating Forces.
- Competency Seven – Corporate Operations. Provides comprehensive support services across the entire Aircraft Division.
- Competency Eight – Shore Station Management. Carries out the command evaluation and control functions necessary to ensure proper use of government

resources and authority. Provides support to shore station commanders and competency heads (Naval Air Warfare Center, 1999).

There are two basic types of shore activities in the navy, those that are directly funded through appropriations and those that must operate on a break-even basis as part of the Navy's Working Capital Fund (WCF). The NAWCAD is a Navy Working Capital Fund Activity. WCF activities must fully recover all costs in order to achieve an Accumulated Operating Result (AOR) of zero. That is, the activity's revenues must equal its costs.

A threat to any WCF activity is a "death spiral" of demand. A death spiral is likely to occur when a WCF activity falls short in revenues and its costs are carried over into the following two years in the form of higher stabilized rates. Customers with the option of buying elsewhere are likely to seek out a lower cost provider. If the customers can find a lower cost option, the WCF activity will likely lose revenue while still incurring fixed costs which must again be carried over for recovery. If the activity cannot recover past costs or find ways to reduce its future costs, it will cease to be a viable operation (Naval Postgraduate School, 1999).

The workforce is a key factor in finding ways to not only recover past costs but to reduce future costs to remain competitive in the first place. An effective reward system can be a motivational tool to help focus the efforts of the workforce.

For the NAWCAD, funding for its reward system is budgeted to overhead. The reward system is a discretionary component of the budget. The minimum funding level for rewards is 1.5 percent of aggregate base salary (Deputy Assistant Secretary of the Navy (CP/EEO), 1998). For FY99 the NAWCAD set the funding level at one percent in

order to meet Net Operating Result (NOR) goals. The funding level was later revised to 1.2 percent in response to a favorable variance in direct hours and overhead cost containment (Runion, 1999). At 1.2 percent of the NAWCAD's total basic pay, the allotment for monetary rewards was 3,592,733 dollars (Appendix A). For FY00 the NAWCAD reward budget has been set at 1.5 percent.

NAWCAD management is interested in using these funds for maximum effectiveness and efficiency. To these ends, the NAWCAD management asked for a study of their reward system.

B. OBJECTIVES

This thesis is based on a recommendation of Ross (1998) for further research to determine the level of effectiveness of the NAWCAD's reward system with respect to current organizational and incentive theory literature and to suggest possible courses of action to improve the current system.

C. RESEARCH QUESTIONS

1. Principle Research Questions

- a. With regard to recent motivational theory, how effective is NAWCAD's current reward system from the perspective of the employees affected by it?
- b. In what ways can the current reward system be improved?

2. Subordinate Research Questions

- a. Does the NAWCAD reward system offer what the employees want?
- b. Has NAWCAD established the line-of-sight between performance and reward?

- c. Is the NAWCAD reward system fair?
- d. Does NAWCAD reward the desired behaviors?
- e. Do NAWCAD employees understand the reward system?
- f. What demographic (sub-group) differences exist among employees regarding various aspects of the NAWCAD's reward system?

D. SCOPE

The scope of this research is limited to the NAWCAD's reward system and evaluation systems, current literature on rewards and incentive systems, and the opinions of NAWCAD employees with respect to the NAWCAD's reward and evaluation systems.

A discussion of methodology is covered in a separate chapter.

E. ORGANIZATION OF STUDY

Chapter II reviews selected motivation theories. The theories of expectancy, equity, line-of-sight, as well as demographic influences are discussed. The chapter also provides guidelines for reward system management based on the theoretical frameworks.

Chapter III describes the methodology used for this research.

Chapter IV provides an analysis of survey data.

Chapter V discusses the data analysis in terms of the theories and guidelines developed in Chapter II.

Chapter VI offers conclusions about the NAWCAD's reward system and offers recommendations for improvements to the reward system. The chapter also provides answers to the research questions and offers recommendations for further research.

F. BENEFIT OF STUDY

This study is intended to evaluate and increase the effectiveness of the NAWCAD's reward system. It may also provide a frame of reference or guidelines for other organizations seeking to maximize the effectiveness of their reward systems.

II. LITERATURE REVIEW

The expected benefit of rewarding employees may be increased productivity for the organization:

Employee incentive awards represent the Rodney Dangerfield of the benefits field--they tend to get little attention or respect by employers. Many employers fail to appreciate that employee incentives, with minimal administrative effort and a relatively low cost, can reap disproportionately large dividends in building up workplace morale, loyalty to the company, and in creating a happier and more productive workforce. (Pruter, 1998)

A reward is essentially a favorable consequence to an action. Rewards fall into one of two categories: extrinsic and intrinsic. Extrinsic rewards are those given by an employer to an employee and can be either monetary or non-monetary, or some combination of both. Intrinsic rewards typically originate in the people receiving them. When a person performs a task solely for the love of the work process or the challenge, they are intrinsically motivated. If a task is successfully completed the person will feel satisfaction for a job well done, pride in their product, and perhaps an elevated sense of self-worth.

There are various approaches for employers to manage intrinsic rewards and motivation. Among these are job enrichment and empowerment. The concept of job enrichment is to change the nature of a person's job to increase the likely intrinsic value to employees through increased skill variety, task identity, and task significance which in turn, leads to experienced meaningfulness of the work. Combined with the effects of increased autonomy and feedback, the end result should be employees who have high

internal work motivation, high quality work performance, high satisfaction with the work, and low absenteeism and turnover (Hackman, Oldham, Janson & Purdy, 1975, p. 59). Empowerment relies on the manager's ability to manipulate factors such as skill variety and task identity, in order to increase employee feelings of personal efficacy and ultimately motivation (Conger, Kanungo & associates, 1989, p. 318).

While these theories provide managers with tools to deal with intrinsic rewards, it is use of extrinsic rewards that typically defines an organization's reward system. That is the focus of this research. Having an understanding of job satisfaction and motivation theories may make it easier for a manager to deal with extrinsic rewards.

A. HERZBERG'S TWO FACTOR THEORY

From the late '50s through the '70s, Frederick Herzberg developed the Two-Factor theory of job motivation (Herzberg, Mausner & Snyderman, 1959; Herzberg, 1968; Herzberg 1974; Herzberg, 1976). Essentially, the theory posits that there are elements of the workplace that act as either dissatisfiers or as motivators. The dissatisfiers are also called hygiene factors. The hygiene factors typically are comprised of the extrinsic factors of the workplace: job security, salary, working conditions, status, company policies, quality of technical supervision, quality relations with peers, and fringe benefits. Motivators, on the other hand, are normally intrinsic to the worker: responsibility, advancement, personal growth and development, the work itself, achievement, and recognition (Herzberg, 1968).

Fig. 2.1 is an example of a standard profile of dissatisfiers and motivators that Herzberg derived from various studies of employees at all organizational levels and from various work cultures. The graphs represent frequency of mention of a factor, and not the magnitude of the factor, as a dissatisfier or motivator. Each factor could potentially have equal weight. Salary is cited as a motivator often enough to be shown on the motivation side of the centerline (Herzberg, 1974).

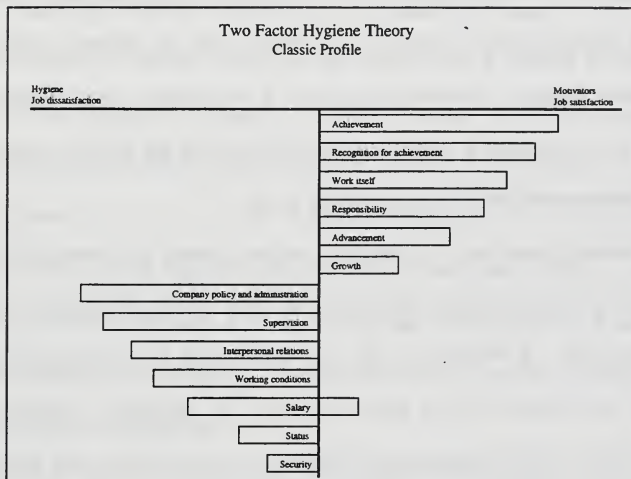


Figure 2.1. Two-Factor Theory. (Herzberg, 1974)

At the heart of Herzberg's theory is that the hygiene factors represent old stick-and-carrot approaches to motivation in which the employee acts only to avoid some level of pain or ensure a level of relief from pain. Herzberg used the term KITA, "kick in the pants" (Herzberg, 1968, p. 54) to describe this management approach. In other words, employees will be motivated to perform only to the minimal level required to gain the

hygiene benefits, and avoid the hygiene sanctions. The hygiene factors do not contribute to job satisfaction; however, if these factors do not meet the employees' expectations, they can significantly contribute to job dissatisfaction.

Herzberg posited that any form of the KITA was an expression of the manager's motivation, not the employee's. For instance, promising an employee that he can go home early when he gets the job done is evidence of the manager's motivation to get the work completed by offering the incentive, the employee merely responds to the incentive. However, the next time, the manager will need to offer this incentive again, to get the performance required. As Herzberg puts it, "I can charge a man's battery, and then recharge it, and recharge it again. But it is only when he has his own generator that we can talk about motivation." (Herzberg, 1968, p. 55)

Herzberg stated that the manager's emphasis should shift from KITA strategy to job design to boost employee motivation. In other words, shift from a hygiene to a motivation focus. In Herzberg's view this would result in an environment where the employee will want to work because the job is interesting, challenging, carries responsibilities, offers opportunities for growth as well as achievement and recognition, and *not* because the boss is threatening or seducing (Herzberg, 1968).

Some of Herzberg's successors have discounted the two-factor theory as a means to explain motivation more or less because of its prescriptive nature and assumed homogeneity of workers and workplaces (Nadler and Lawler, 1983). There is also some concern over the strong dichotomy of the two factors in that the extrinsic factors can only be dissatisfiers and intrinsic factors can only be motivators (Lawler, 1973). Some recent

studies of public and private sector employees, in fact, have found that several hygiene factors (salary, security, and freedom from supervision) are at or near the top of the list of motivators (Jurkiewicz and Massey, 1996; Jurkiewicz, Massey and Brown, 1998). Critics of the two-factor theory have looked to expectancy theory as a means of better explaining motivation (Nadler & Lawler, 1983).

B. EXPECTANCY

The expectancy theory of motivation was initially developed by the industrial psychologist Victor H. Vroom (1964) and has been further developed by Nadler and Lawler (1977) and others. Expectancy, in Vroom's words, "is defined as momentary belief concerning the likelihood that a particular act will be followed by a particular outcome." (1964, p. 17) In a shorter definition, "expectancy is an action-outcome association." (1964, p. 18) The key aspect to Vroom's expectancy theory, in terms of motivation, is that these outcomes are assigned a certain level of valence. Valence is the degree of desirability of the outcome. Valence can have any negative or positive value, with zero as a point of indifference.

Likelihood in its strictest sense, is probability. Expectancy theory revolves around the probabilities that people assign to aspects of their work and the desirability of the outcome. For example, motivation is the product of the probability that a given level of effort will result in a certain performance (i.e., Effort-Performance Expectancy) and the probability that a certain performance will have a certain outcome (i.e., Performance-Outcome Expectancy) multiplied by the valence (Nadler & Lawler, 1977). Refer to Figure 2.2.

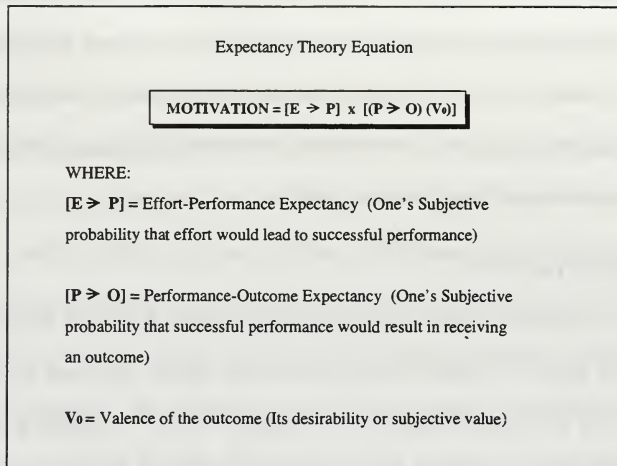


Figure 2.2. Expectancy Theory Equation. (Nadler & Lawler, 1977)

For the purposes of this thesis, the Performance-Outcome Expectancy is the subjective probability that an individual's performance will result in receiving a reward. In this light, base pay should be considered as compensation and not reward.

Figure 2.3 illustrates how motivation relates to actual performance. Based on some level of motivation, an individual exerts effort, which is influenced by the individual's ability and problem-solving approach. The resulting performance will have some extrinsic (rewards) or intrinsic (pride in workmanship) outcome. The arrow between performance and extrinsic outcomes is dashed to represent the fact that extrinsic outcomes do not always follow performance. The outcomes, in turn, will produce some level of satisfaction for the individual. It should be noted that if the valence for the outcomes is negative, the end product might be dissatisfaction. The feedback lines

represent the learning process, for the individual, which determines future motivation and problem solving approaches (Nadler & Lawler, 1977).

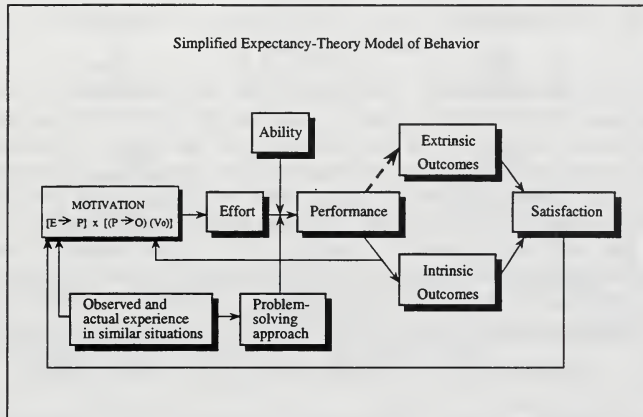


Figure 2.3. Simplified Expectancy-Theory Model of Behavior. (adapted from Nadler & Lawler, 1977)

C. EQUITY

Equity theory is closely related to expectancy theory. Equity theory essentially revolves around the comparisons people make of their own ratio of outputs to inputs to others' output/input ratio and the degree of fairness (equity) they perceive in the comparison. Inputs are the contributions a person makes to their work, while outcomes are the consequences of their work. See Figure 2.4 below (Adams, 1965).

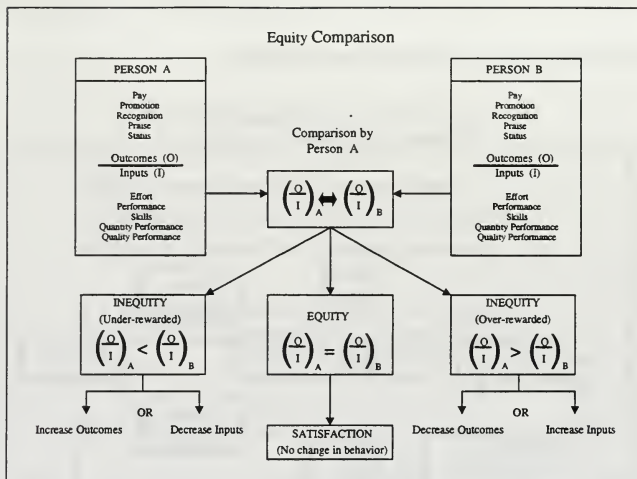


Figure 2.4. Equity Comparison. (adapted from Adams, 1965)

Adams developed equity theory through the incorporation of the theories of relative deprivation and distributive justice (1965, p. 268). Adams refined the idea of relative deprivation by looking at studies of Army soldiers and airmen. In the case of soldiers, it was found that high school graduates were less satisfied with their rank than non-high school graduates of equal rank. Adams assumed that there was a correlation between education and aspiration, and that when aspiration was not met with an appropriate level of success, then the soldier was experiencing deprivation relative to his non-high school graduate counterpart.

In the case of Army Air Corps men, relative deprivation was used to describe what can happen when high expectations are not met. Army Air Corps men had a greater

opportunity for advancement than their non-Air Corp peers. Dissatisfaction was greater among Air Corps men who did not promote than among the non-Air Corp men who did not promote (Adams, 1965).

After examining these and other studies, Adams came to a number of conclusions:

First, it seems that manifest dissatisfaction and other behavior are responses to acutely felt injustice, rather than directly to relative deprivation... Injustice, then, may be said to mediate the effects of deprivation... A second conclusion is that what is just is based upon relatively strong expectations, such as that educational achievement will be correlated with job status achievement and that one will be promoted at about the same rate as one's fellows... Thirdly, it is clear that a comparative process is inherent in the development of expectations and the perception of injustice, as implied by the term *relative deprivation*... Felt injustice is a response to a *discrepancy* between what is perceived to be and what is perceived should be. (1965, pp. 271-272)

Distributive justice, as a theory, is distinct from relative deprivation in its use of ratios (Adams, 1965). Adams, referencing Homan, illustrates distributive justice in exchange relationships (Adams, 1965, pp. 272-273). In these relationships, person A compares his ratio of net profit (reward-cost) and investment (defined as: skill, effort, education, training, experience, age, sex and ethnic background) to person B's ratio of net profit and investment. The person with the smaller ratio will, in turn, experience what is essentially relative deprivation. If A and B have different rewards, distributive justice may still exist as long as person A feels that their level of investment to reward is proportional to person B's investment to reward. In other words, person A can be satisfied with rewards less than person B's if he understands his investment also was smaller (Adams, 1965).

Adams points out that distributive justice includes the employer in the comparison of ratios insofar as each person expects the employer to "maintain a fair ratio of rewards to investments between himself and other men." (Adams, 1965, p. 273) He continues, "This, of course, is the perennial dilemma of employers..." (Adams, 1965, p. 273)

As a response to what he perceived as shortcomings of relative deprivation and distributive justice theories, Adams developed equity theory to describe the consequences of inequity. In his words, "Men do not simply become dissatisfied with conditions they perceive to be unjust. They usually do something about them." (Adams, 1965, p. 276) From Figure 2.4, we see that when person A is under-rewarded, he may seek to increase outcomes or decrease inputs. Increased outcomes may result from asking for promotion or transfer, or by complaining to the union representative. Inputs may be decreased through a reduction in the work pace, productivity or quality of effort. On the other hand, if the inequity favors person A (i.e., person A is over-rewarded), person A may decrease outcomes or increase inputs. It is more likely, that person A will increase inputs to "earn" the level of reward. Adams finds less evidence that equity would be brought into balance by a person trying to reduce their outcomes (p. 288).

D. LINE OF SIGHT

Perhaps the most important element of extrinsic rewards is the concept of line of sight. Simply put, line of sight is the employee's perception of a given action having a given consequence. The stronger the link between an action and its consequence the clearer the line of sight. In the case of rewards, an employee has a strong line of sight to a reward when she believes that her performance will result in his receiving that reward.

A crucial aspect of developing line of sight is an organization's reward policy. A reward policy may not be enough. An organization must act in accordance with its policy because people are motivated by what they perceive in the situation rather than by what the official policy may be (Lawler, 1996).

According to Lawler (1996), establishing line of sight is the way for an organization to connect rewards to desired behaviors (p. 210). However, an organization must not only reward desired behaviors, it must also ensure that the rewarded behaviors, and the measures of performance for those behaviors, are aligned with organizational goals. The following section deals with the alignment of rewarded standards of performance to organizational goals.

E. ON THE FOLLY OF REWARDING A, WHILE HOPING FOR B

A study of NAWCAD's performance measures as a basis for rewards is outside the scope of this paper. However, because rewards are generally given on the basis of some measurement of performance, a brief discussion is warranted. The metrics used to gauge the performance or health of an organization may also be the standards used to reward performance. For example, an organization may choose to reward employees when a certain production quality level or some budget measure is met. However, managers must carefully choose which standards of performance to use as a basis for rewards.

Steven Kerr's "On the Folly of Rewarding A, While Hoping for B" (1975) provides several rich examples of what happens when an organization chooses the wrong measure of performance for reward purposes. In one instance, he cites numerous

problems with an insurance company's reward system. The company was losing money in claims payments because the system rewarded claims personnel on the basis of "percentage of claims paid within two days of receipt." (p. 778) This measure was rewarding quantity over quality. The same firm used attendance as a measure to determine if a worker would receive a merit raise at the end of the year. If an employee stayed within a maximum number of absences or times tardy, they would then be eligible for the merit raise. The company hoped that this would increase productivity, instead they merely increased the level of attendance without a corresponding increase in productivity (Kerr, 1975).

Stone and George (1997) argue that public agencies must consider three factors in establishing reward criteria: the *function* of the agency, the *processes* used to operationalize the function, and the *outcomes* of those processes (p. 310). Process measures of performance reflect an organization's efficiency, while outcome measures of performance reflect an organization's effectiveness. Organizations may find themselves in a "folly" situation when they choose only one or the other measure of performance. However, when an agency rewards employees on the basis of a combination of process (efficiency) and outcome (effectiveness) measures of performance, the objectives of the organization stand a better chance of being met (p. 320). See Figure 2-5 for an illustration of these three different possibilities.

A relevant hypothetical example could be rewarding an assembly line for number of units produced (outcome) versus the degree of quality control (process). Even if quotas are met on time, the producer may be faced with an unacceptable level of quality

complaints from customers. If the producer rewards solely on the basis of quality control, the productivity of the line may decline. A proper balance of rewards based on process and outcome measures should ensure that the producer meets both quality and quantity goals.

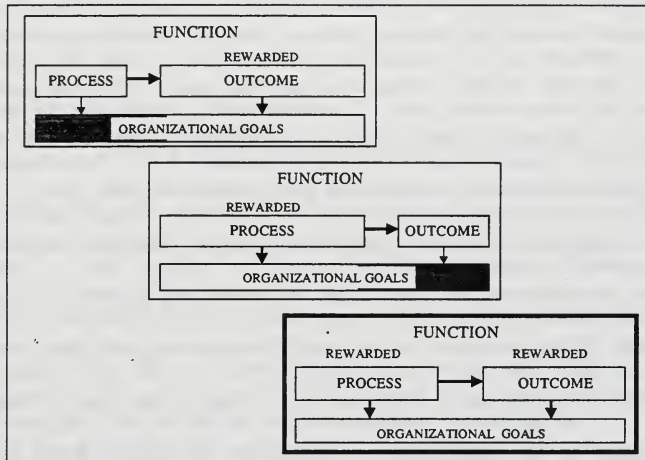


Figure 2.5. Rewarded Process-Outcome-Organizational Goal Relationship. (Derived from Stone & George, 1997)

F. TEAM VS. INDIVIDUAL REWARDS

The recent trend towards team-based activities has added a new dimension to reward theory. Given the importance of rewarding desired behaviors, should we reward individual effort in a team-based environment? There is an emphasis, in the current literature on team-based organizations, on team rewards over individual performance rewards (Mohrman, Cohen & Mohrman, 1995; Lawler, 1996; Compensation and Benefits

Review, 1996). A study conducted by Mohrman, Cohen and Mohrman (1995) found that rewarding individual performance in a team-based setting adversely affects team performance in terms of the impact of feelings of inequity among unrewarded team members. Perhaps more importantly, they found that the process of defining and reviewing team performance had a greater positive effect on team performance than the actual rewards for team performance. Defining what team performance should be, with input from the team members, relates to the supposed positive effects of goal-setting on performance. The essence of goal-setting is that performance increases in the presence of defined goals and supervision towards those goals (Latham & Locke, 1979).

It is important to consider organizational structure. Individual rewards may have their place in an organization where teams are formed and liquidated on a project by project basis. Not all employees may necessarily be on a team at all times, and yet, they still perform work important to the organization. There is also a need to recognize the type of teams in the organization. Administrative or full-time teams may require different incentives, such as merit pay increases, as compared to project or part-time teams that may be motivated by one-time bonuses (Lawler, 1996; Compensation and Benefits Review, 1996). In the literature reviewed, the reward most often suggested for teams is some form of gainsharing (Patton and Daley, 1998; Mohrman, Cohen and Mohrman, 1995; Lawler, 1996; Compensation and Benefits Review, 1996; Pelletier and Rahim, 1993). Gainsharing typically rewards all the employees of a business unit, plant, or division of an organization. The standard measure of performance for reward is usually something that everyone receiving the reward can influence. For instance, the

employees may be rewarded for quality improvements or cost controls (things they can influence) instead of profit which is partially a function of sales price (something they probably can't influence) (Lawler, 1996, P. 214).

G. PERFORMANCE VS. JOB SATISFACTION

An organization may be mistaken to assume that rewarding an employee for performance will result in increased job satisfaction for the employee. Quality performance can exist without job satisfaction. It is also possible to have job satisfaction without performance (Jain & Triandis, 1990). McCue and Gianakis' (1997) review of research findings suggests that there is either no relation between job satisfaction and performance, a weak relation, or certain conditional relations between various components of job satisfaction and performance. The following example demonstrates how a company can have a reward system that helps meet high performance organizational goals, and yet provides low job satisfaction for employees.

In the team context, pressure on otherwise low performers can make a team more productive (Pelletier & Rahim, 1993; Ezzamel & Willmott, 1998). This performance may come at the expense of the satisfaction of high performers in the team. In a study of teamwork at a clothing manufacturer, Ezzamel and Willmott (1998) found that groups working to meet production level goals in order to receive a bonus, achieved those levels when the more senior and skilled workers took up the slack for, or pushed and prodded the junior and relatively unskilled workers. The work groups greatly increased productivity, although the individuals responsible for the performance were clearly not satisfied with their jobs and sensed a high degree of inequity in comparison to the low

performers. The study hints at a correlation between relative seniority and financial responsibilities at home that may have led the high performers to work towards the bonus despite their increased job dissatisfaction. In other words, the bonuses had such a high valence that they were willing to suffer inequity and the resulting dissatisfaction.

H. DEMOGRAPHICS

In the earlier review of equity theory, we saw that the input or investment workers make to their work is comprised of skill, effort, education, training, experience, age, gender and ethnic background (Adams, 1965, p. 273). How might these factors, specifically, age, job type (skill, education, training), race and gender, affect job satisfaction and reward preferences?

1. Age

It is possible that there may be differences in reward preference based on age. In their review of the literature, McCue and Gianakis (1997) found that job satisfaction increases with age up until an employee reaches 50 or 60 years old and steadily declines until retirement (McCue & Gianakis, 1997).

Ting's (1997) literature review found a number of possible reasons why age might be positively correlated to job satisfaction. Older employees may have a stronger work ethic. They may face greater consequences for leaving their employer in terms of limited job opportunities. They also have more experience than younger employees do in adapting to different job situations. For these reasons they may be more likely to justify staying with their organization as well as developing a stronger sense of job satisfaction (Ting, 1997).

One of Ting's (1997) research hypotheses is that "Older employees are more satisfied with their jobs than younger employees." (p. 316) Although his research concluded that "federal government employees seem to experience higher levels of job satisfaction as they become older," (p. 319) he also found that age had "significant effects on job satisfaction of federal government employees at GS 6 or below, but no effect on employees at higher levels." (p. 325)

2. Job Type

In the literature reviewed, most of the studies of public employment reward systems either examine specific groups --e.g. local government finance officers (McCue & Gianakis, 1997), city/municipal government (Patton & Daley, 1998; Jurkiewicz & Massey, 1996), --or are comparative studies of public and private employers (Jurkiewicz, Massey & Brown, 1998; Risher, 1997). A common theme to these studies is the determination of variance between reward preferences of one job type versus another. Perhaps most relevant to this thesis are the studies which have examined reward system management in research and development organizations. These studies have found that engineers and scientists have distinct patterns of reward preferences. They are also important because they point out the differences in reward preferences of engineers and scientists based on age, education, and career length.

Jain and Triandis (1990) argue that overall, "scientists crave visibility," (p. 100), however, the needs and desires of scientists and engineers change throughout their careers. Younger scientists seek additional training and qualifications. Middle age scientists (35-50) desire increased visibility amongst their peers, while older scientists

and engineers (50+), though still desiring visibility, also look for security, health and retirement benefits (Jain & Triandis, 1990).

A study of German engineers and scientists found similar results, though a "craving" for visibility does not seem apparent. In an empirical analysis of German R&D corporate incentive systems, Muhlemeyer (1992) identifies four sets of incentives. Two of these sets are social-status-related incentives, and skill-enhancement-related incentives. Social-status-related incentives are those rewards that affect status and prestige, including praise from senior staff and mention in-house magazines. Skill-enhancement-related incentives include continued education and training, opportunities to present research to peers, as well as seminar and trade fair attendance (Muhlemeyer, 1992).

The results of this study found that people working at large R&D labs were less concerned with recognition than were researchers working in smaller labs. In large labs, little weight was given to the proverbial "pat on the back.". On the other hand, education and training, and seminar and trade fair attendance usually took second and third place in incentive rankings after monetary awards for invention. Muhlemeyer found that monetary awards for inventions usually ranked at the top of the list of incentives for R&D personnel regardless of company size or the demographic factors of age, education and training or rank in the company (Muhlemeyer, 1992).

3. Race and Gender

Between 1986 and 1996 the percentage of men in the civilian labor force drop from 55.5 percent to 53.8 percent. Female representation during the same period

increased from 44.5 percent to 46.2 percent. Whites by percentage fell from 86.4 percent to 84.4 percent. Blacks increased from 10.7 percent to 11.3 percent. Hispanics rose from 6.9 percent to 9.5 percent. Asian and other groups (Pacific Islanders, American Indians and Alaska Natives) rose from 2.9 percent to 4.3 percent. By percentage, participation by women and by minorities is projected to increase through 2006 although at a slower growth rate than during the 1986-96 period (Bureau of Labor Statistics, 1997).

As of February 1999, the racial makeup of NAWCAD at the Patuxent River and Lakehurst sites was similar to the national figures of 1996 with slightly higher representation of whites at 85.7 percent; lower representation of blacks and Hispanics at 7.8 percent and 2.5 percent respectively; representation of Asians and others was nearly equivalent to the national average at 4.1 percent. On the other hand, at 73.1 percent, males are significantly over-represented compared to the national average (Naval Air Warfare Center Aircraft Division, 1999).

Gender and ethnic diversity may present managers of a diverse workforce with additional challenges with regard to fairness and equity when giving rewards as opposed to managers of homogenous workforces. McCue and Gianakis' (1997) literature review suggested that fully employed, older, educated, white, male employees had greater job satisfaction than part-time, younger, less educated, black, female employees. Their study concluded, however, that gender and ethnicity did not impact job satisfaction. They disclaimed this conclusion on the basis of a limited number of women and other minorities in their sample.

Ting's review of literature revealed that women and minorities stated that they are still facing job difficulties despite advances made in equal opportunity employment. One of Ting's research hypotheses was that "male and white employees are more satisfied with their jobs than their female and minority counterparts." (Ting, 1997, p. 317) Ting's survey also found no significant differences in job satisfaction on the basis of race or sex. He did discover, however, that lower GS level white employees were more satisfied with their jobs than their minority counterparts. The situation reverses itself at higher GS levels. Ting attributes the shift to the perception that senior white employees have of the federal government's pursuit of affirmative-action (Ting, 1997). All of this is to suggest that a given diverse workforce may pose a challenge for reward managers if other factors in the work environment disrupt the balance of job satisfaction levels along racial or gender lines.

I. EFFECTIVE REWARD SYSTEM MANAGEMENT ATTRIBUTES

Rewarding employees should be a simple matter. However, managing the different aspects of expectancy, equity, intrinsic vs. extrinsic rewards, job satisfaction vs. productivity, varieties in individual reward preference, and individual vs. team performance can make the process confusing and difficult. We might assume from the variety of recommended reward systems and management practices that there is no identified "best system," a review of the literature however, uncovers some commonalities that lend themselves to general prescriptives for reward system management.

When contemplating reward system design and management, managers should consider the following questions.

Are we giving what the employee wants? Managers need to understand what employees value (Nadler & Lawler 1977). Because each employee is different, the reward to be granted should be considered from the standpoint of the rewarder. A reward should be important to an employee to be an effective motivator (Lawler, 1996). Any undesired award or one with a significantly low valence to the employee is a wasted resource when it is given. A good reward system will allow as great a variety of rewards as is reasonable (Jain & Triandis, 1990).

Have we established the line-of-sight between performance and reward? Employees must be able to recognize the link between favorable outcomes of their actions and rewards (Lawler, 1996; Pelletier, 1993). Not only should there be a recognizable link, there should also be a reasonably short time span between performance and reward (Riggs, 1995; Rickert, Duncan & Ginter, 1995).

Is it fair? (Muhlemeyer, 1992; Nadler & Lawler, 1977) Equity is an important element in any reward system. Relative differences in reward distribution can lead to the perception of inequity, which in turn could lead to a decline in organizational performance. Because it may not be realistic to completely rid the reward system of inequity, we should consider making sure that inequality favors the less powerful members of the organization (Jain & Triandis, 1990). Favoring the less powerful might keep motivation at lower organizational levels (where the operations of the organization are performed) higher than it otherwise would be. Despite our best intentions, managing equity may be out of our control. Aside from policy and management's efforts, it is the

employee who determines whether equity exists or not depending on his perception of the situation (Jurkiewicz, Massey & Brown, 1998).

Are we creating an entitlement? Rewards should be given because they are deserved by performance (Riggs, 1995). When rewards are divorced from performance they lose their strength as motivators. Rewards given on a routine basis, such as Christmas bonuses, become expected compensation much like pay. Because employees may commit these funds before they receive them, not receiving the bonus becomes a tremendous demotivator (Pruter, 1998). This is not to imply that bonuses are bad, merely that they need to be tied to some standard of performance (gain sharing as an example) (Riggs, 1995; Jain & Triandis, 1990; Mohrman, Cohen & Mohrman, 1995; Patton & Daley, 1998; Latham & Locke, 1979; Lawler, 1996).

Are we rewarding the right behavior? There's no shortage of anecdotal and empirical evidence to support the conclusion that rewards should be engineered to motivate people toward organizational goals (Kerr, 1975; Stone & George, 1997; Riggs, 1995; Nadler & Lawler, 1977; Mohrman, Cohen & Mohrman, 1995).

Do the employees understand the reward system? Communication is essential in dealing with equity, expectancy, and line-of-sight. The existence of a written policy is not enough. A reward system should be simple to understand, if it is necessarily complicated, the onus is on managers to help employees understand the system (Pelletier, 1993). Managers, supervisors, and employees alike need to understand the content of the reward policy in order for incentives to have the maximum motivational effect.

Researchers recommend employee involvement in the design of reward systems to create buy-in by the employees (Riggs, 1995; Pelletier, 1993).

Finally, understanding is hampered by secrecy. Managers may be tempted to give rewards in secret to avoid the perception of inequity (Lawler, 1996). Instead, secrecy may have the adverse effect of creating distrust (Pelletier, 1993). Secrecy obscures line-of-sight, and prevents the reward system from properly motivating as it should (Lawler, 1996). Valassis Communication, a coupon marketing company rated by Fortune magazine as one of the one hundred best companies to work for, has gone to an extreme to eliminate secrecy. Managers ring bells and place the rewarder on a pedestal as a way to motivate the other employees (Hitt, Ireland & Hoskisson, 1999).

The following points summarize the elements of a good reward system. Note that the common element to all but two is the link between performance and rewards:

- Rewards should have a high valence (value) to the employee.
- Employees should be able to see the connection between performance and rewards.
- Rewards should be given equitably. Equal performances should receive equal rewards.
- Rewards should not become entitlements. Rewards should be given for performance, not out of habit or tradition.
- Performance measures used for reward criteria must be appropriate for the goals of the organization.

- The reward policy must be communicated to and understood by the work force to be effective.

J. SUMMARY

Managers must weigh several considerations when rewarding employees. It may not be enough to justify an award on the basis that a manager feels an employee deserves it. An organization must develop reward systems that take the notions of expectancy, line of sight, and equity into account. Each of these ideas ties rewards to performance. All of these theories must also be considered against the backdrop of workforce diversity. Above all, whatever the chosen reward system, it should be aligned with the goals of the organization in order to prevent motivating actions that undermine organizational performance. It should be noted that extrinsic rewards are only a part of job satisfaction and motivation. An in-depth discussion of other factors such as job redesign and goal setting are beyond the scope of this paper.

III. METHODOLOGY

Archival and opinion research methods were employed in answering the primary and secondary questions.

A. ARCHIVAL

The archival-based research consisted primarily of studying current literature concerning rewards and incentive systems. The emphasis of the literature centered on the varying aspects of incentive theories and their application in empirical tests. Theories, ideas and concepts generated from the literature review were used to inform the opinion-based research.

B. OPINION

The opinion-based research consisted of focus groups, interviews and a survey questionnaire.

1. Focus Groups

Four focus groups were conducted at NAWCAD in Patuxent River, MD. Three of the focus groups were held with employees at Patuxent River. The fourth focus group was conducted via Low Bit Rate Videoconference with Lakehurst, NJ employees. Each focus group met for approximately 45 minutes.

Each of the Patuxent River employee focus groups was comprised of different pay grade groupings of 6-8 employees. The employees in Group One were Federal Wage System (FWS) and General Service (GS) levels one through nine. Group Two consisted of GS levels ten through thirteen, while Group Three was made up of GS fourteens and

fifteens. The Lakehurst focus group made up of a mix of FWS through GS fifteen employees.

Each group was asked three general questions: What do you like about NAWCAD's reward system? What do you dislike about NAWCAD's reward system? What would you change about the reward system? Additional questions were asked to guide the groups when necessary. The various levels of seniority between the groups made it possible to ask more specific questions concerning likes and dislikes. For instance, Group One employees were in non-supervisory jobs. Group Two had some employees who were or had been team leaders and lower level competency managers. Group Three had upper level competency managers. Each of the groups was able to provide multiple perspectives of the reward system.

2. Interviews

Interviews were conducted with seventeen individuals from a range of pay grades. Twelve interviews were held at Patuxent River, while the remaining five were held via telephone with Lakehurst employees. All interviews were approximately 30 minutes long.

Questions asked during the individual interviews were similar to those used in the focus groups. The interviews allowed for more specific questioning concerning the individual's job type. For instance, an interview with a Team Leader involved questioning not only their experience as an individual benefiting from the reward system, but as a Team Leader managing the reward system as well.

3. Survey Questionnaire

Ideas and concepts from the literature review led to the line of questioning used at the focus groups and interviews. Information obtained from the focus groups and interviews was combined with the material from the literature review to generate the survey questionnaire (Appendix B). The survey was pre-tested by a seven-member group including two professors and five students, to evaluate the survey design in terms of instruction clarity as well as understandability and relevance of the statements. A cover letter addressed the purpose of the survey, return instructions, and assured the respondents of anonymity.

The upper portion of the front page of the questionnaire contains census information blocks to allow demographic stratification of the response data. The demographic data gathered included: age, gender, ethnicity, marital status, time to travel to/from work one way, competency, paygrade, and years with organization.

The lower half of the front page has two identical lists of rewards. The list of rewards included both those specifically listed in NAWCAD's current instruction, such as Special Act awards and Quality Step Increases, as well as generic reward types, such as End of year large cash award, large and small public recognition. The first list is used to measure the respondents' valence of rewards, while the second list is used to measure respondents' satisfaction levels for the organization's use of those rewards. The rewards evaluated, in terms of valence and satisfaction, included:

- Time-Off awards
- Special Act awards

- Sustained Excellence awards
- Honorary Recognition
- End of year large cash awards
- Large Public Recognition (competency wide or larger)
- Small public Recognition (office or team)
- Private Recognition (few peers and immediate supervisor)
- Educational/Training opportunities
- Employee of the Month, Quarter, Year, etc.
- Personalized Items (neck straps, photos, paperweights, etc.)

To evaluate valence, respondents chose from a 6-point scale ranging from the lowest value, 1 (Highly Undesirable) to the greatest value, 6 (Highly Desirable). A similar 6-point scale was used for gauging respondents' satisfaction with the NAWCAD's handling of various rewards. The lowest value, 1, represents Highly Unsatisfied, while 6 represents Highly Satisfied.

The back of the form includes twenty-two statements designed to gauge opinions on various aspects of the reward and evaluation systems. This area is also designed around a 6-point scale to measure the range of disagreement or agreement a respondent may have with each statement. The scale values range from 1 to 6 representing Strongly Disagree (1), Disagree (2), Mildly Disagree (3), Mildly Agree (4), Agree (5), and Strongly Agree (6). Eighteen of these statements are evaluative in nature. They are designed to gauge opinion of the current or *de facto* reward system. Examples include:

- "I believe awards are effectively linked to performance."

- “I feel that team performance is adequately rewarded.”
- “My supervisor understands the importance of using monetary awards.”

The remaining six statements are normative. That is, they are “should” statements about reward system management. Statement 55, “Award money should be kept confidential,” is an example of a normative statement.

The last section on the back of the form contains six questions to be answered only by competency managers and team leaders designed to gauge their opinions on administrative aspects of the reward and evaluation systems. Some examples include:

- “Differences in rules and resources across competencies make it difficult to equitably reward members of the same team.”
- “I am satisfied with the time between nomination and approval of awards.”
- “I feel that I have adequate discretion over rewarding my workforce.”

All but one of these statements are assessment style statements. Statement 66, “Approval authority for On-The-Spot awards should be delegated to a lower management level,” is the only normative statement in the section. In both sections, the questions concerning the performance evaluation system are restricted to their relation to the reward system.

4. Questionnaire Distribution

Questionnaires were mailed to seven hundred NAWCAD civilian employees. Participants were randomly selected. The sampling strategy was stratified to assure adequate sample size from small subgroups of interest --e.g., smaller competencies and paygrades. Most respondents had approximately seven days to respond to the survey

depending on in-house mail delivery at Patuxent River, MD and Lakehurst, NJ. Survey returns received up to ten days past the “please mail by” date were included for analysis.

Two hundred and forty of the seven hundred surveys were sent to Lakehurst, NJ, with the balance sent to Patuxent River, MD. In each group seventy of the forms were sent to FWS employees to ensure their representation in the response. The sample size of each location was determined to be proportional to the overall distribution of employees at Lakehurst (35 percent) and Patuxent River (65 percent).

5. Demographic Breakdown of Survey Response

Three hundred and fifty-nine usable surveys were received by the cutoff date for response. The rate of return from Lakehurst, NJ was forty-five percent. Rate of return from Patuxent River, MD was fifty-four percent. Tables 3.1.-3.4 detail the demographic breakdown of the survey response. Numbers in parentheses after each demographic factor represent the number of people out of 359 who checked one of blocks for that factor.

DEMOGRAPHIC RESPONSE RATE

<u>Factor</u>	<u>Percentage</u>
GENDER (338):	
Male	69
Female	31
ETHNICITY (353):	
American Indian	1
Asian or Pacific Islander	3
Black (not of Hispanic origin)	8
Hispanic	1
White (not of Hispanic origin)	84
Other	1
<i>For statistical purposes, this factor has been revised as Non-white and White, due to the relatively small number of minorities.</i>	
AGE GROUPS (347):	
21-34 yrs	14
35-39 yrs	18
40-44 yrs	18
45-49 yrs	17
50-54 yrs	17
55+ yrs	15

Table 3.1. Demographic Response Rate.

DEMOGRAPHIC RESPONSE RATE cont.

<u>Factor</u>	<u>Percentage</u>
MARRITAL STATUS (354):	
Married	74
Single or Divorced	26
CHILDREN AT HOME (343):	50
TRAVEL TIME BETWEEN WORK AND HOME (335):	
15 minutes or less	30
16-30 minutes	41
31-60 minutes	23
60+ minutes	6
COMPETENCY (346):	
One	8
Two	14
Three	12
Four	25
Five	13
Seven	15
Eight	11

Table 3.2. Demographic Response Rate. Cont.

DEMOGRAPHIC RESPONSE RATE cont.

<u>Factor</u>	<u>Percentage</u>
JOB-TYPE (351):	
Administrative	35
Clerical	3
Engineering/Science	39
Trades/Crafts	22
<i>For statistical purposes, the Clerical Group has been incorporated Into the Administrative group.</i>	

PAYGRADE (357):	
FWS	20
GS 1-6	6
GS 7-8	6
GS 9-10	7
GS 11	11
GS 12	20
GS 13	24
GS 14	5
GS 15	2
<i>For statistical purposes, these groups have been reorganized as FWS, GS 1-8, GS 9-11, GS 12, and GS 13-15.</i>	

Table 3.3. Demographic Response Rate. Cont.

DEMOGRAPHIC RESPONSE RATE cont.

<u>Factor</u>	<u>Percentage</u>
LEADERSHIP POSITIONS (354):	
Competency Managers	3
Team Leaders	20
Both	1
Neither	74

For statistical purposes, people who marked "Both" were combined with Competency Managers.

YEARS WITH ORGANIZATION (SENIORITY) (350):

0-4 yrs	23
5-10 yrs	17
11-14 yrs	16
15-19 yrs	18
20-25 yrs	13
26+ yrs	13

Table 3.4. Demographic Response Rate. Cont.

6. Survey Data Analysis

The data from the questionnaires were evaluated using SPSS version 9.0. Frequency and percentage of response for each item can be found in Appendix B. Results from initial analysis suggested that some items or statements could be combined

to form scaled variables that might provide more useful information than the individual items or statements.

Reliability tests of internal consistency were performed for these monetary awards (coefficient alpha = .71):

- Special Act awards
- Sustained Excellence awards
- On-The-Spot small cash awards
- End of year large cash awards
- Quality Step Increases

Reliability tests of internal consistency were performed for the following recognition rewards (coefficient alpha = .80):

- Honorary Recognition
- Large public recognition
- Small public recognition
- Private recognition
- Employee of the Month, Quarter, Year, etc.

Alpha coefficients of .71 for monetary rewards, and .80 for recognition rewards are sufficient to justify creating simple scaled measures for “monetary rewards,” and “recognition rewards.” Scales were computed by averaging the mean ratings for component items. All analysis reported in Chapter IV use these two scaled variables. Appendix D includes item-level analysis for specific monetary and recognition rewards.

A reliability analysis was performed on these statements:

- “I am satisfied with the reward system.”
- “I think the reward system is fair and equitable.”
- “The command has adequately emphasized the importance of rewarding its employees.”
- “I believe that if I achieve a high level of performance the organization will reward me.”

The alpha coefficient for these statements was .89 indicating internal consistency among the responses to the statements. These statements were combined in a single variable titled “Reward System Effectiveness.”

A reliability analysis was also performed on these statements:

- “I feel that team performance is adequately rewarded.”
- “The mix of team and individual awards is properly balanced.”

The alpha coefficient for these statements was .82 indicating consistency among the responses to the statements. These statements were combined in a single scaled variable titled “Teams are adequately rewarded and balanced with individual rewards.”

Tests of sub-group differences in ratings of reward preference, reward satisfaction, and reward system evaluation were conducted. A one tailed ANOVA (F-test) was used for sub-groups containing more than two factors (Competency, Paygrade, Job-type, Age groups, Seniority groups, Leadership groups); while a t-test was used for sub-groups with only two factors (Race, Gender, Location). In the case of ANOVA testing, if the F-test found a significant difference among sub-group factors, then post hoc testing, Least Squares Difference (LSD), was used to specify those sub-group differences.

In the data analysis chapter, relative mean ratings for the total sample lead each major section of analysis. For instance, the first section on desirability of rewards starts with a look at total NAWCAD mean values of desirability of rewards before sub-group differences are analyzed. Items or statements were analyzed against specific sub-groups only if such analysis would provide useful or relevant information. Only those sub-groups, which contained any statistically significant differences for a given item, statement, or scaled variable, will be illustrated.

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IV. DATA ANALYSIS

A. INTRODUCTION

This data analysis generally follows the outline of the survey questionnaire (Appendix B). The first section analyzes reward desirability (survey items 14-26), followed by reward satisfaction (survey items 27-39). The second section analyzes responses to the general statements concerning the reward system (survey items 40-68). The general questions are examined in two parts, first an analysis of the assessment statements about the reward system *as it currently exists*; then, an analysis of responses to the normative statements of how the reward system *should be*. The means and frequencies for all responses can be found in Appendix C.

B. REWARDS DESIRABILITY

The organization-wide means for each reward (survey items 14-26) are listed in Fig. 4.1. All monetary rewards are the most desired, ranging from quality step increases to special act awards. The remainder of the list are all non-monetary rewards: educational and training opportunities, time-off awards, various recognition rewards, and finally, personalized items.

There are some statistically significant break points within this hierarchy of desirability. With a mean difference of .59, End of Year Large Cash Award desirability is higher than On-The-Spot Small Cash Awards ($p < .000$). The desirability of Educational and Training Opportunities has a statistically significant higher value

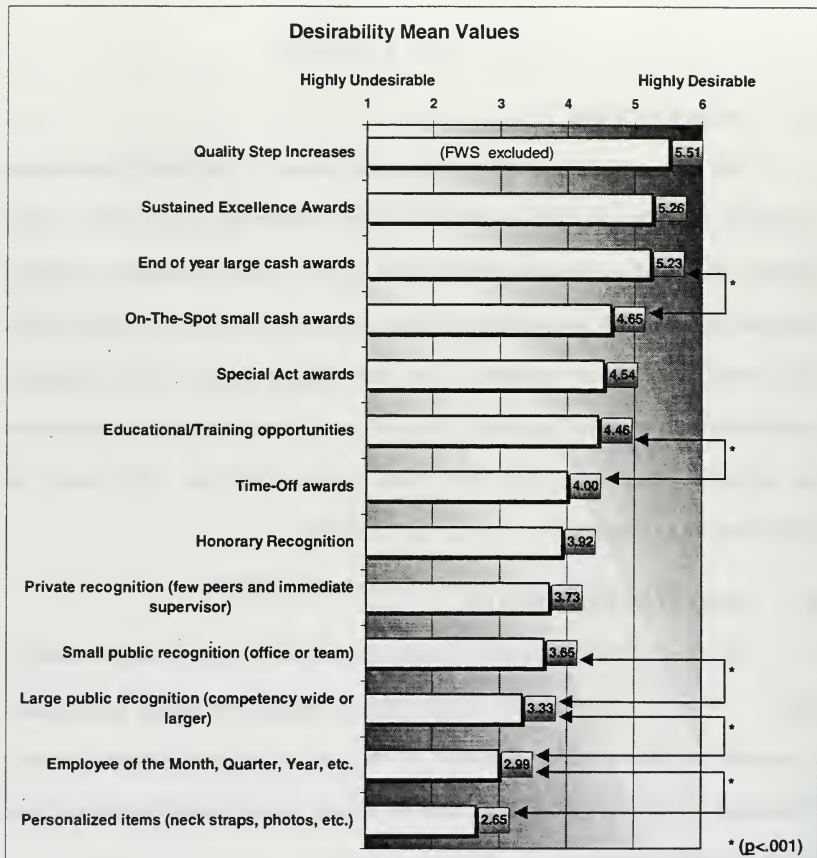


Figure 4.1. Reward Desirability Mean Values

(difference = .47) than Time-Off awards ($p < .000$). Refer to Fig. 4.1 for other significant differences.

As mentioned in the methodology, the monetary and recognition type awards have been grouped into scaled variables: Desirability of Monetary Rewards and

Desirability of Recognition Rewards. These groupings are used to facilitate the analysis of group differences in reward preference. In the following sections, only findings with statistically significant ANOVA results are presented. In all cases, post hoc comparisons of means used the Least Significant Difference (LSD) test. Further analysis of specific monetary and recognition rewards can be found in Appendices C and D.

1. Scaled Variable: Desirability of Monetary Rewards

The combined NAWCAD population mean for the desirability of the scaled variable of monetary awards is 4.99. For this variable, whites have a higher value (difference = .28) than non-whites [$t(312)=1.98$, ($p<.05$)]. Refer to Fig. 4.2.

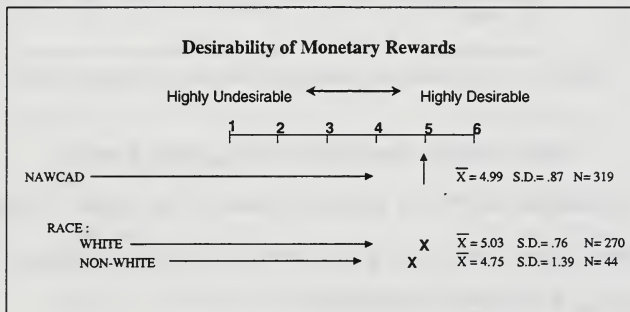


Figure 4.2. Desirability of Monetary Rewards (Race).

For seniority groups, the ANOVA results are: [$F(309)=2.65$, ($p<.023$)]. The mean for the most senior group (6) has a statistically significant lower value than the most junior group (1) and Group 4 (15-19yrs) ($p<.042$), but not statistically different from the remaining groups. The mean for the most junior group (1) has a statistically significant

higher value than the means for Group 3 (11-14yrs) and Group 6 (26+yrs) ($p < .013$), but not a statistically significant difference from the remaining groups. Refer to Fig. 4.3.

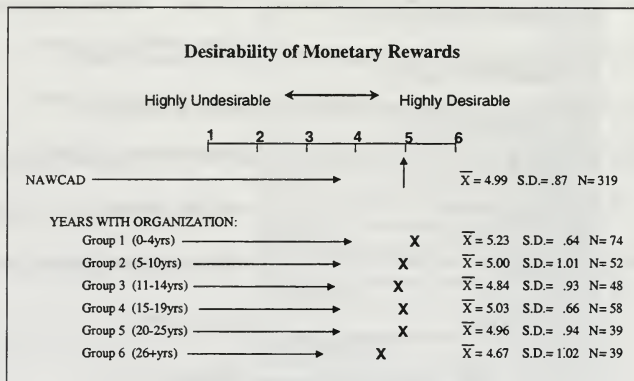


Figure 4.3. Desirability of Monetary Rewards (Seniority groups).

2. Scaled Variable: Desirability of Recognition Rewards

The combined NAWCAD population mean for this scaled variable is 3.50. Females have a higher value for recognition rewards' desirability (difference = .30) than males [$t(294) = 2.20$, ($p < .028$)]. Refer to Fig. 4.4.

Non-whites have a higher value for recognition rewards' desirability (difference = .40) than whites [$t(307) = 2.33$, ($p < .020$)]. Refer to Fig. 4.5.

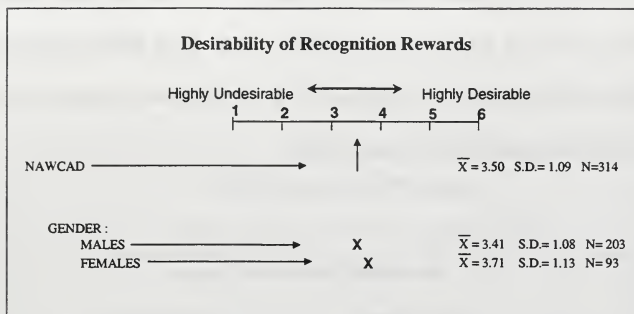


Figure 4.4. Desirability of Recognition Rewards (Gender).

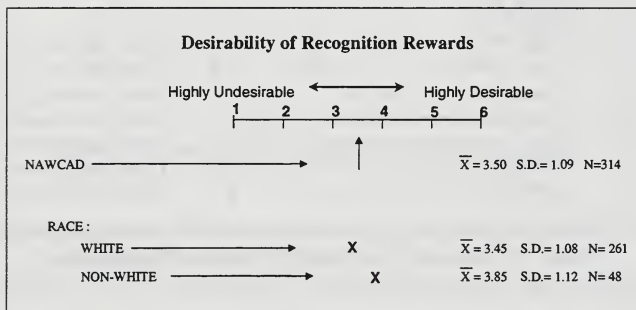


Figure 4.5. Desirability of Recognition Rewards (Race).

3. Time-Off Awards

The combined NAWCAD population mean for desirability of Time-Off Awards is 4.00. For Competencies, the ANOVA results are: $[F(6,328)=4.575 (p<.000)]$. As shown in Fig. 4.6, Competency Two has the highest valuation of this award and Competency One the lowest with all but the latter having a mean above the midpoint (3.5). The mean for Competency One has a statistically significant lower value ($p<.05$)

than the means for all other competencies. Competency Two has the highest rating on this question and has a statistically significant higher value than Competencies One, Three, Four, and Five ($p < .04$). Competency Two does not have a statistically significant difference from Competencies Seven and Eight.

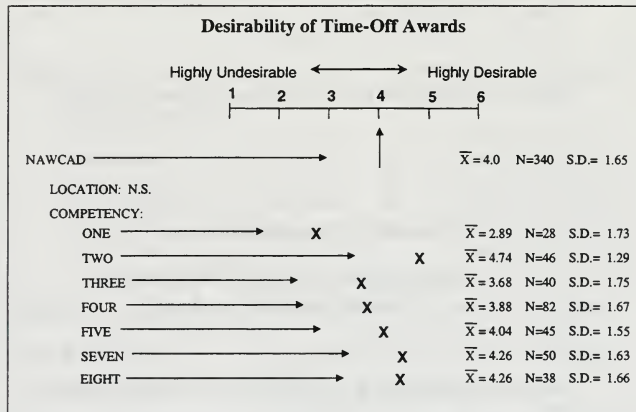


Figure 4.6 Desirability of Time-Off Awards (Competencies).

For paygrades, the ANOVA results are: $[F(4,338)=4.654 (p < .001)]$. In general, there is a trend for decreasing valuation of time off as General Service (GS) employees move up in paygrades. The mean for the General Service (GS) 13-15 group has a statistically significant lower value than the means for Federal Wage System (FWS), GS 1-8, and GS 9-11 ($p < .032$). The GS 13-15 group does not have a statistically significant difference from GS 12s. The GS 1-8 group has the highest rating on this variable, with a statistically significant higher value than the GS 12 and GS 13-15 groups ($p < .018$). The

GS 1-8 group does not have statistically significant difference from the FWS and GS 9-11 groups. Refer to Fig. 4.7.

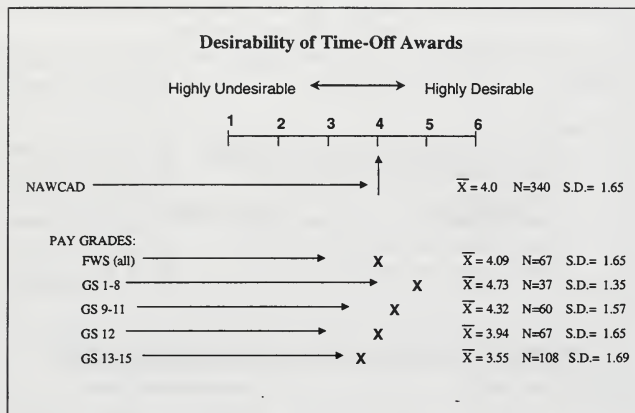


Figure 4.7. Desirability of Time-Off Awards (Paygrades).

For age groups, the ANOVA results are: $F(5,327)=3.520$ ($p<.004$). In general, there is a trend for decreasing valuation of time off with increased age. Specific between group contrasts show that Group 6 (55+ yrs) has the lowest mean with a statistically significant lower value ($p<.016$) than the means for groups 1 (21-34 yrs) and 3 (40-44 yrs). Group 6 does not have a statistically significant difference from groups 2 (35-39 yrs), 4 (45-49 yrs), and 5 (50-54 yrs). Group 1 has the highest rating on this question and has a statistically significant higher mean value ($p<.015$) than groups 2, 4, 5, and 6. Group 1 does not have statistically significant difference from Group 3. Refer to Fig. 4.8.

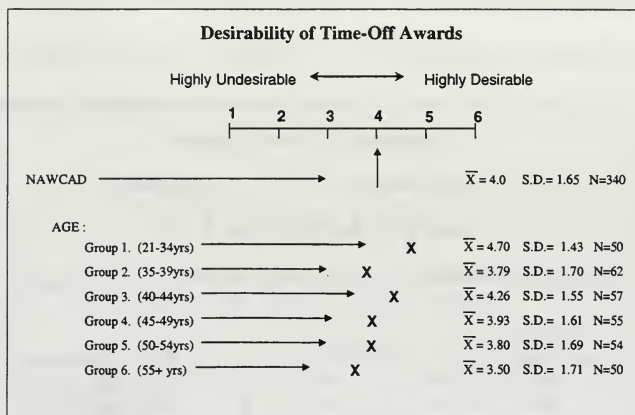


Figure 4.8. Desirability of Time-Off Awards (Age groups).

Females have a higher value for time off (difference = .76) than males [t(319)=3.95, (p<.000)]. Refer to Fig. 4.9.

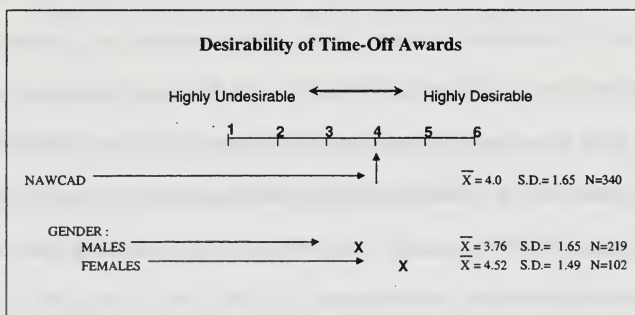


Figure 4.9. Desirability of Time-Off Awards (Gender).

For job-type groups, the ANOVA results are: $[F(2,331)=8.486 \text{ (} p<.000)]$. Engineering/Science (Group 3) has the lowest mean, with a statistically significant lower value than the means for Administrative/Clerical and Trades/Crafts (groups 1 and 2) ($p<.004$). Administrative/ Clerical has the highest rating on this question, with a statistically significant higher mean value than Group 3 ($p<.000$). Refer to Fig. 4.10.

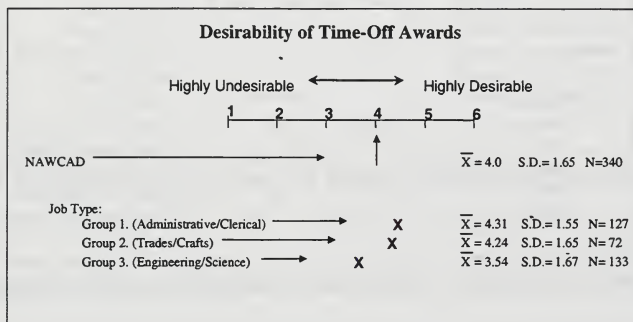


Figure 4.10. Desirability of Time-Off Awards (Job-type).

4. Educational and Training Opportunities

The combined NAWCAD population mean for desirability of Educational and Training Opportunities is 4.46. For paygrades, the ANOVA results are: $[F(4,337)=5.419 \text{ (} p<.000)]$. The mean for the GS 12 group has a statistically significant lower value than the means for the FWS, GS 1-8, and GS 9-11 groups ($p<.027$). The GS 12 group does not have a statistically significant difference from the GS 13-15 group. The FWS group has the highest rating on this question and has a statistically significant higher mean value than the GS 12, and GS 13-15 groups ($p<.001$). The FWS group does not have a

statistically significant difference from the GS 1-8 and GS 9-11 groups. Refer to Fig. 4.11.

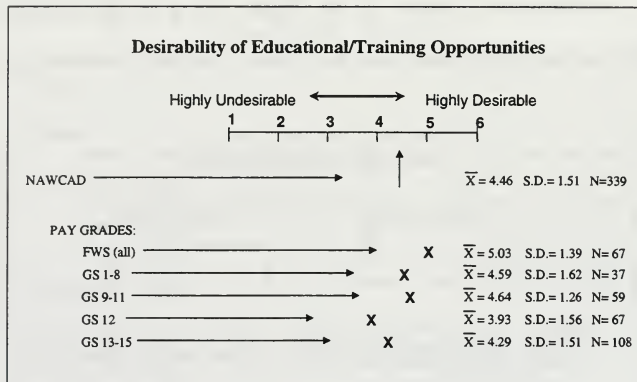


Figure 4.11. Desirability of Educational & Training Opportunities (Paygrades).

For seniority groups, the ANOVA results are: $[F(5,329)=3.415$ ($p<.005$)]. Group 5 (20-25yrs) has the lowest mean, with a statistically significant lower value than the means for both of the most junior groups (1 and 2) and the most senior (Group 6) employees ($p<.043$). Group 5 does not have statistically significant difference from groups 3 and 4. The most junior group (1) has the highest rating on this variable, with a statistically significant higher mean value than groups 3, 4, and 5 ($p<.046$). Group 1 does not have a statistically significant difference from groups 2 and 6. Refer to Fig. 4.12.

Non-whites have a higher value (difference = .74) for Educational and Training Opportunities than whites [$t(332)=3.20$, ($p<.002$)]. Refer to Fig. 4.13.

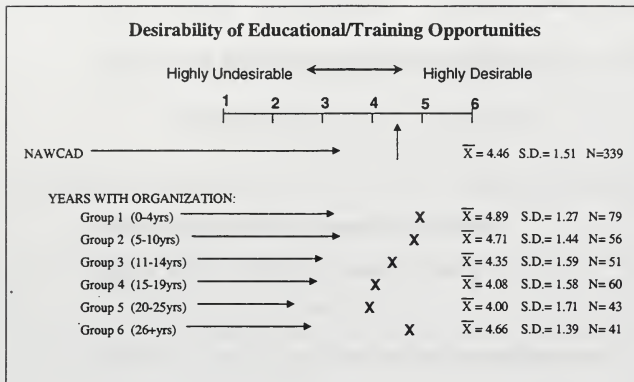


Figure 4.12. Desirability of Educational & Training Opportunities (Seniority groups).

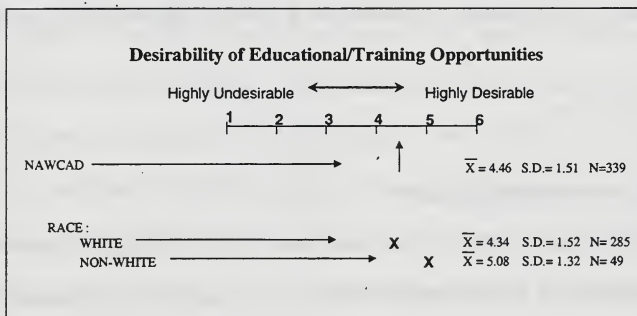


Figure 4.13. Desirability of Educational & Training Opportunities (Race).

Among job-type groups, the ANOVA results are: $[F(2,330)=7.56, (p<.001)]$. The Trades/Crafts group (2) has the highest rating on this variable, with a statistically

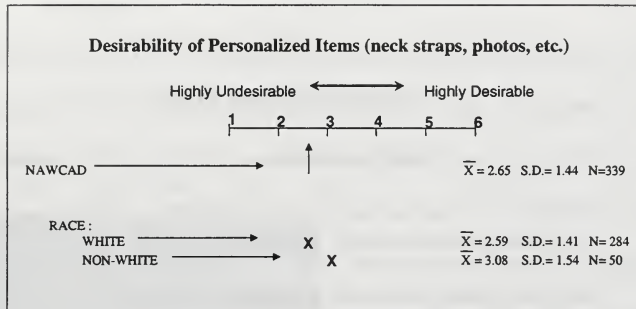


Figure 4.15. Desirability of Personalized Items (Race).

C. SATISFACTION WITH ORGANIZATION'S USE OF REWARDS

The organization-wide means for levels of satisfaction with the organization's use of rewards (survey items 27-39) are listed in Fig. 4.16. These means do not show a particular pattern of greater or lesser satisfaction with types of rewards --i.e., the monetary and recognition rewards are evenly distributed throughout the list as opposed to the clear hierarchical structure of the desirability means list (Fig. 4.1). There is a statistically significant breakpoint between Educational/ Training opportunities and Private Recognition ($p < .05$).

Responses to survey items 27-39 were analyzed against the following factors: location, competency, pay grade, age, seniority, gender, race, and job-type. Only those factors that contained any statistically significant differences will be illustrated. Scaled variables for monetary and recognition rewards were used in this section as well. Data for specific monetary and recognition rewards may be found in Appendices C and D.

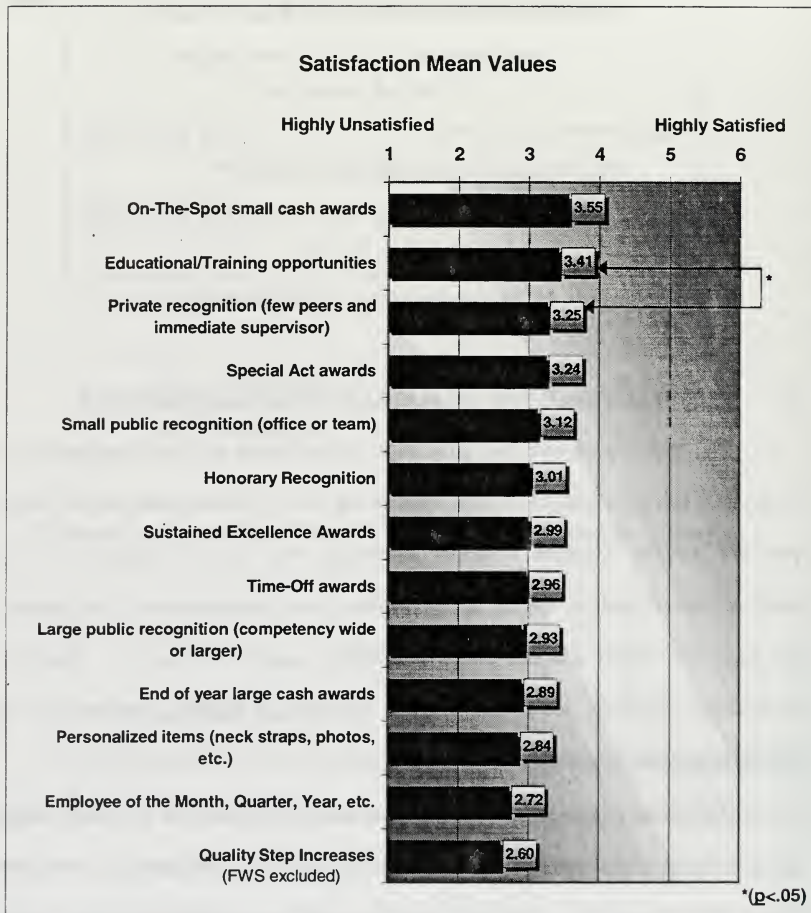


Figure 4.16. Reward Satisfaction Mean Values.

1. Scaled Variable: Satisfaction with Organizational use of Monetary Rewards

The combined NAWCAD population mean for this scaled variable is 2.99. For paygrades, the ANOVA results are: $[F(330)=5.237, (p<.000)]$. The mean for the FWS group has a statistically significant lower value than the means for the GS 9-11 and GS 13-15 groups ($p<.001$). The FWS group does not have a statistically significant difference from the GS 1-8 and GS 12 groups. The mean for the GS 9-11 group has a statistically significant higher value than the means for the FWS, GS 1-8, and GS 12 groups ($p<.039$). Refer to Fig. 4.17.

For job-type groups, the ANOVA results are: $[F(322)=4.504, (p<.012)]$. The mean for Trades/Crafts (Group 2) has a statistically significant lower value than the mean for Administrative/Clerical (Group 1) ($p<.003$). Groups 1 and 2 do not have statistically significant difference from Engineering/Science (Group 3). Refer to Fig. 4.18.

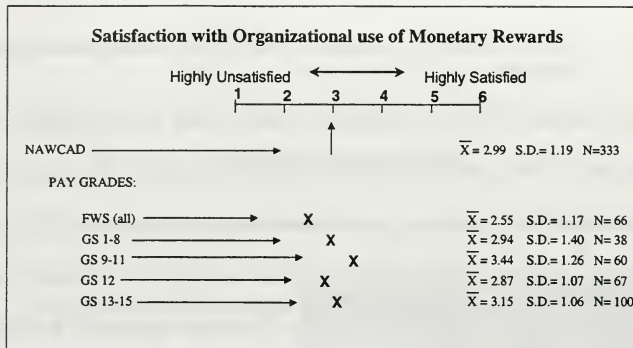


Figure 4.17. Satisfaction with Organizational use of Monetary Rewards (Paygrades).

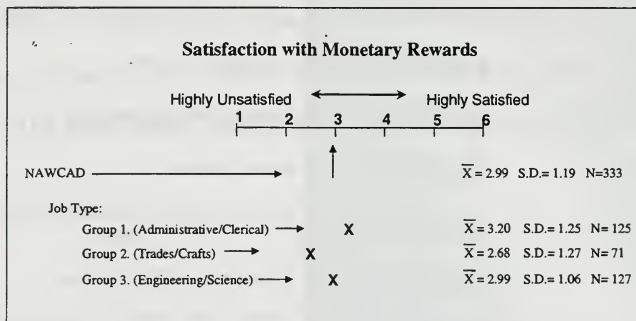


Figure 4.18. Satisfaction with Organizational use of Monetary Rewards (Job-type).

Females have a higher value for this scaled variable (difference = .44) than males [t(312)=3.06, (p<.002)]. Refer to Fig. 4.19.

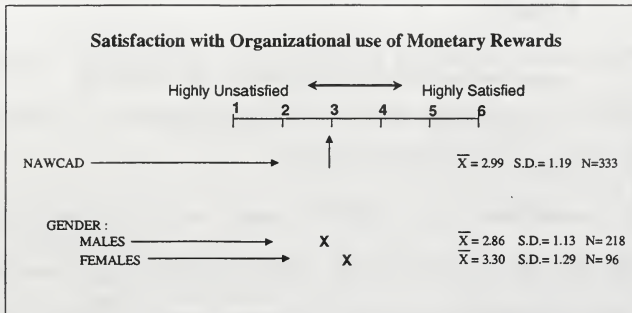


Figure 4.19. Satisfaction with Organizational use of Monetary rewards (Gender).

Non-whites have a higher value for this scaled variable (difference = .68) than whites [$t(325)=3.79$, ($p<.000$)]. Refer to Fig. 4.20.

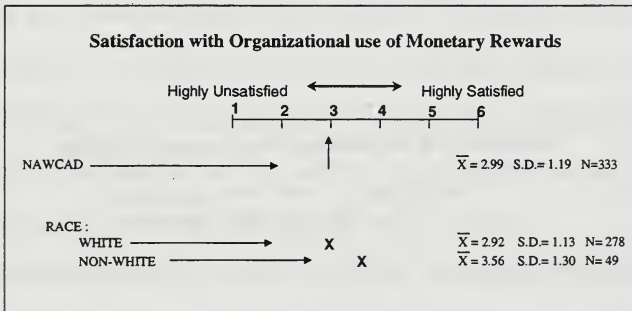


Figure 4.20. Satisfaction with Organizational use of Monetary Rewards (Race).

2. Scaled Variable: Satisfaction with Organizational use of Recognition Rewards

The combined NAWCAD population mean for this scaled variable is 2.98. Patuxent River, MD has a higher value for this variable (difference = .42) than Lakehurst, NJ [$t(319) = 2.96$, ($p < .003$)]. Refer to Fig. 4.21.

For competencies, the ANOVA results are: [$F(313) = 2.99$, ($p < .007$)]. Competency Five has the lowest mean, with a statistically significant lower value ($p < .025$) than Competencies Two, Four, and Seven, which do not have a statistically significant difference between them. Competency Two has the highest mean, with a statistically significant higher value ($p < .015$) than Competencies Three, Five, and Eight, which do not have a statistically significant difference between them. The mean for Competency Seven has a statistically significant higher value than Competencies Five and Eight ($p < .025$). Refer to Fig. 4.22.

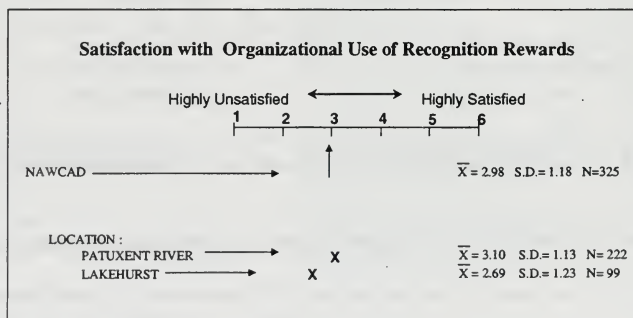


Figure 4.21. Satisfaction with Organizational use of Recognition Rewards (Location).

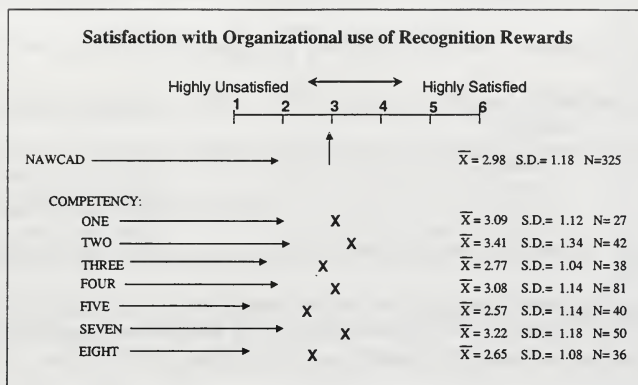


Figure 4.22. Satisfaction with Organizational use of Recognition Rewards (Competencies).

Among paygrades, the ANOVA results are: $[F(322)=5.741, (p<.000)]$. The mean for the FWS group has a statistically significant lower value than the means for the GS 1-8, GS 9-11, and GS 13-15 groups ($p<.026$), none of which have a statistically significant difference from each other. The mean for the GS 9-11 group has a statistically significant higher value than the means for the FWS and GS 12 groups ($p<.008$), which do not have a statistically significant difference between them. Refer to Fig. 4.23.

For job-type groups, the ANOVA results are: $[F(314)=6.251, (p<.002)]$. The mean for Trades/Crafts (Group 2) has a statistically significant lower value than the means for the Administrative/Clerical and Engineering/ Science groups (1 and 3) ($p<.011$), which do not have a statistically significant difference between them. Refer to Fig. 4.24.

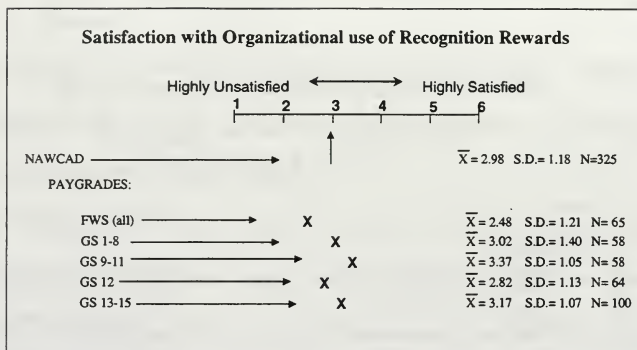


Figure 4.23. Satisfaction with Organizational use of Recognition Rewards (Paygrades).

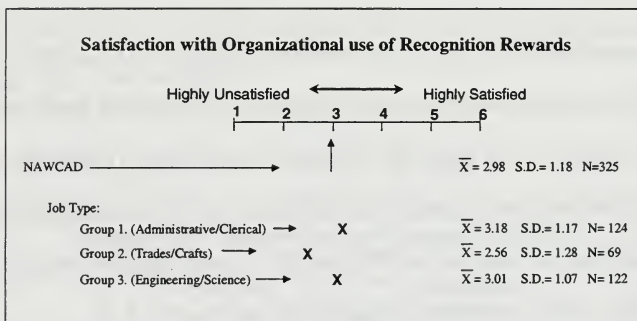


Figure 4.24. Satisfaction with Organizational use of Recognition Rewards (Job-type).

3. Educational and Training Opportunities

The combined NAWCAD population mean for satisfaction with organizational use of Educational and Training Opportunities is 3.41. Among competencies, the

ANOVA results are: $[F(6,335)=3.378 \text{ (} p<.003\text{)}]$. The mean for Competency Five has a statistically significant lower value than the means for Competencies One, Two, Three, Four, and Seven ($p<.038$). Competency Five does not have a statistically significant difference from Competency Eight. Competency Two has the highest rating on this question, with a statistically significant higher mean value than Competencies Four, Five, and Eight ($p<.013$). Refer to Fig. 4.25.

For paygrades, the ANOVA results are: $[F(4,345)=8.085 \text{ (} p<.000\text{)}]$. The mean for the FWS group has a statistically significant lower value ($p<.000$) than the means for GS 1-8, GS 9-11, and GS 13-15 groups, but not significantly different from the GS 12 group. The GS 1-8 group has the highest rating on this question, with a statistically significant higher mean value than the FWS and GS 12 groups ($p<.004$). Refer to Fig. 4.26.

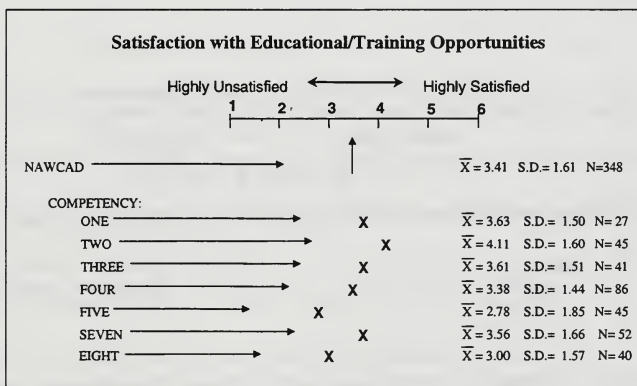


Figure 4.25. Satisfaction with Educational & Training Opportunities (Competencies).

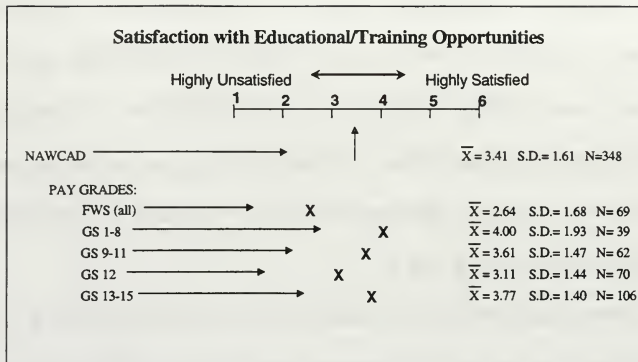


Figure 4.26. Satisfaction with Educational & Training Opportunities (Paygrades).

Females have a higher level of satisfaction (difference = .62) with organizational use of Educational and Training Opportunities than males [$t(325)=3.29$, ($p<.030$)]. Refer to Fig. 4.27.

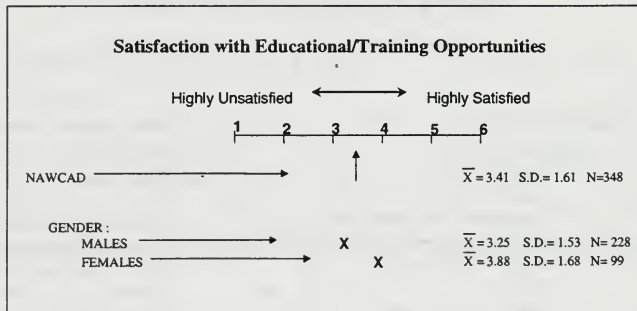


Figure 4.27. Satisfaction with Educational & Training Opportunities (Gender).

Non-whites have a higher level of satisfaction (difference = .52) with organizational use of Educational and Training Opportunities than whites [$t(340)=2.15$, ($p<.033$)]. Refer to Fig. 4.28.

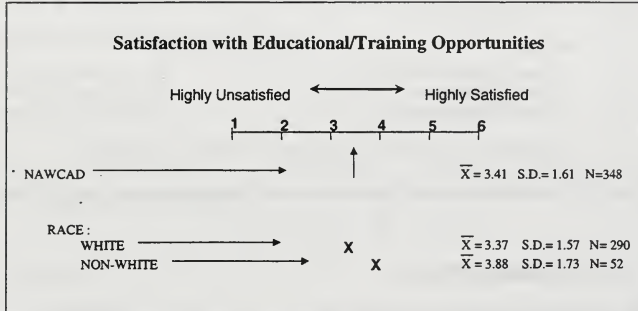
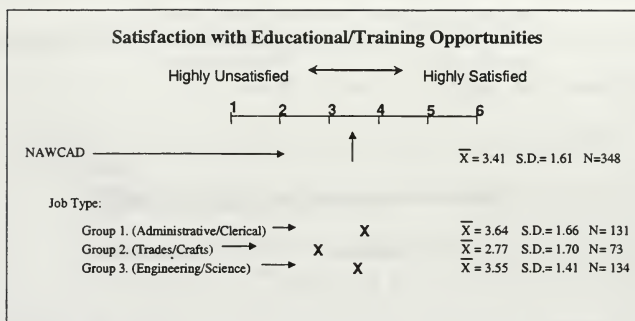


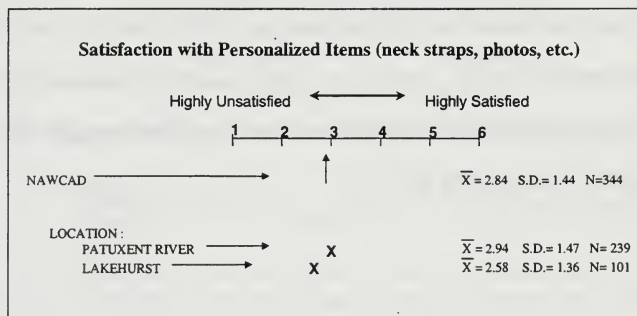
Figure 4.28. Satisfaction with Educational & Training Opportunities (Race).

For job-type groups, the ANOVA results are: [$F(2,337)=8.043$ ($p<.000$)]. The Trades/Crafts group (2) has the lowest mean, with a statistically significant lower value ($p<.001$) than the means for the Administrative/ Clerical and Engineering/Science groups (1 and 3) ($p<.000$). Refer to Fig. 4.29.



4. Personalized Items

The combined NAWCAD population mean for satisfaction with organizational use of Personalized Items is 2.84. Patuxent River, MD has a higher level of satisfaction (difference = .35) than Lakehurst, NJ [$t(338)=2.07$, ($p<.039$)]. Refer to Fig. 4.30.



For competencies, the ANOVA results are: $[F(6,331)=2.606 (p<.018)]$. The mean for Competency Five has a statistically significant lower value ($p<.038$) than the means for Competencies Two, Four, and Seven. Competency Two has the highest rating on this question, with a statistically significant higher mean value than Competencies Three, Five, and Eight ($p<.03$). Refer to Fig. 4.31.

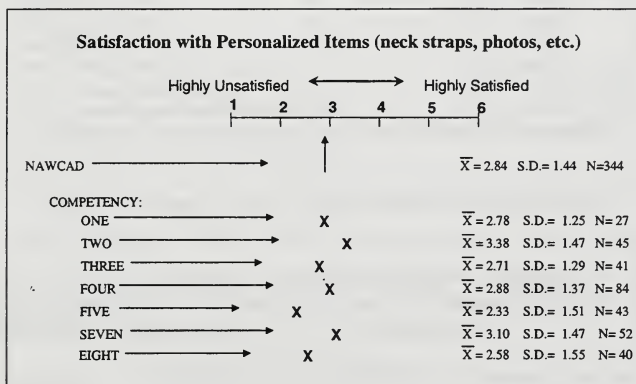


Figure 4.31. Satisfaction with Personalized Items (Competencies).

For paygrades, the ANOVA results are: $[F(4,341)=3.287 (p<.012)]$. The mean for the FWS group has a statistically significant lower value than the means for GS 1-8, GS 9-11, and GS 13-15 groups ($p<.019$). The FWS group does not have a statistically significant difference from the GS 12 group. Refer to Fig. 4.32.

Females have a higher level of satisfaction (difference = .36) with organizational use of Personalized Items than males [$t(322)=2.68, (p<.008)$]. Refer to Fig. 4.33.



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(1 and 3), which do not have a statistically significant difference between them. Refer to Fig. 4.34.

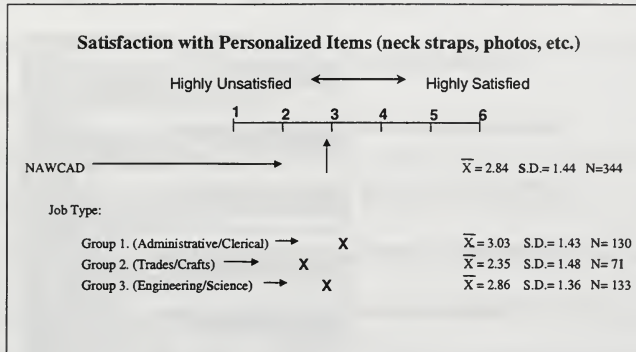


Figure 4.34. Satisfaction with Personalized Items (Job-type).

D. COMPARISON OF DESIRABILITY AND SATISFACTION OF REWARDS

Figure 4.35 shows a comparison of the desirability of rewards and the level of satisfaction with the organization's use of those rewards. These items are listed from highest to lowest desirability. At the bottom of the list, Personalized Items are the only rewards where satisfaction with organizational use of the reward surpasses the desirability of the reward. The satisfaction ratings for recognition rewards generally grow with desirability. Moving up the list, there is an apparent pattern of satisfaction of organizational use of a reward decreasing as the desirability of the monetary rewards increases. Satisfaction with the use of On-The-Spot Small Cash Awards (the largest magnitude level of satisfaction from Fig. 4.16) may be an exception to this pattern.

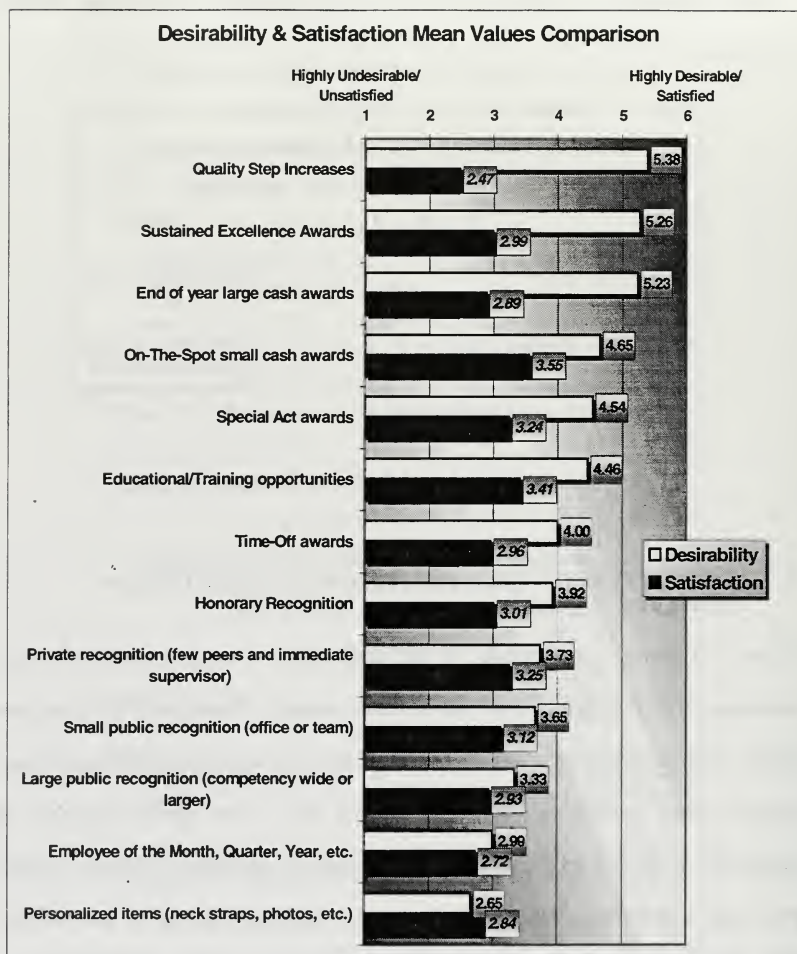


Figure 4.35. Desirability & Satisfaction Mean Values Comparison.

E. REWARD SYSTEM EFFECTIVENESS

As described in the Methodology chapter, a scaled variable comprised of four assessment statements is used to measure rating of overall reward system effectiveness. The combined NAWCAD population means for each of the statements as well as the scaled variable are shown in Fig. 4.36.

All of the statements in this section have a mean falling in the range between mild disagreement and mild agreement. The lowest rating is for statement 42, "I think the reward system is fair and equitable." Statement 45, "I believe that if I achieve a high level of performance the organization will reward me" has the highest rating. All of the means for each of the items have a statistically significant difference from each other ($p < .032$). The following section describes significant mean differences of select groups for the scaled variable "Reward System Effectiveness." Detailed information for combined NAWCAD responses to each of the individual items can be found in Appendix C.

Patuxent River, MD has a higher value for reward system effectiveness (difference = .38) than Lakehurst, NJ [$t(337) = 2.49$, ($p < .013$)]. Refer to Fig. 4.37.

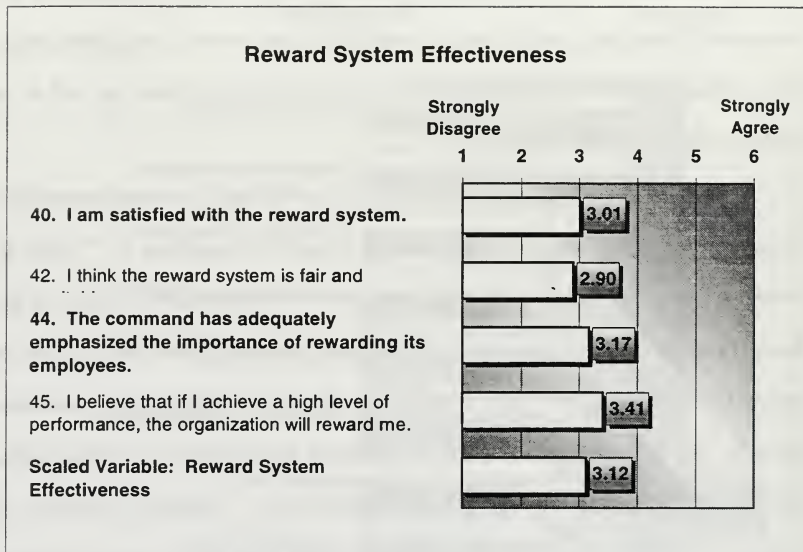


Figure 4.36. Reward System Effectiveness.

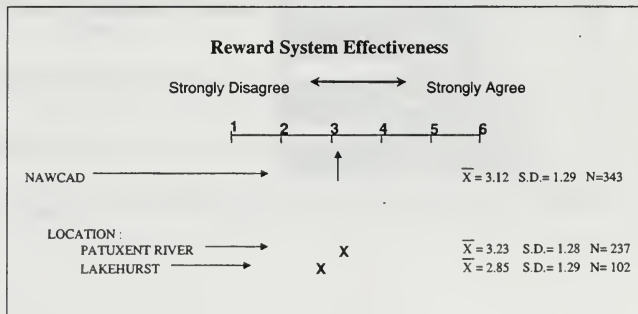


Figure 4.37. Reward System Effectiveness (Location).

Among competencies, the ANOVA results are: $[F(6,330)=2.537 \text{ (} p<.021)]$.

Competency Two has the highest rating on this question, with a statistically significant higher mean value than Competencies One, Two, Three, Four, Five, and Eight ($p<.034$), but does not have a statistically significant difference from Competency Seven. Refer to Fig. 4.38.

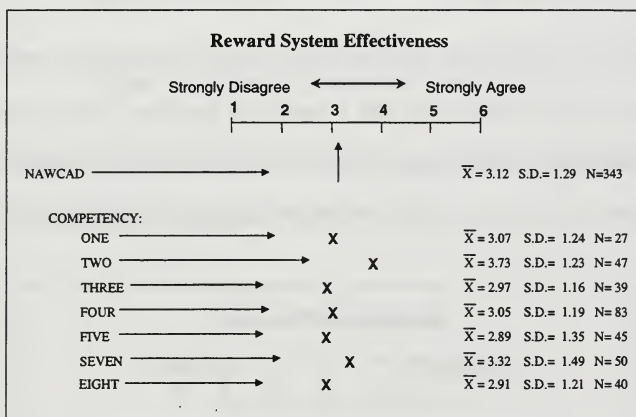


Figure 4.38. Reward System Effectiveness (Competencies).

Across paygrades, the ANOVA results are: $[F(4,340)=5.728 \text{ (} p<.000)]$. The mean for the FWS group has a statistically significant lower value than the means for all other groups ($p<.028$). Refer to Fig. 4.39.

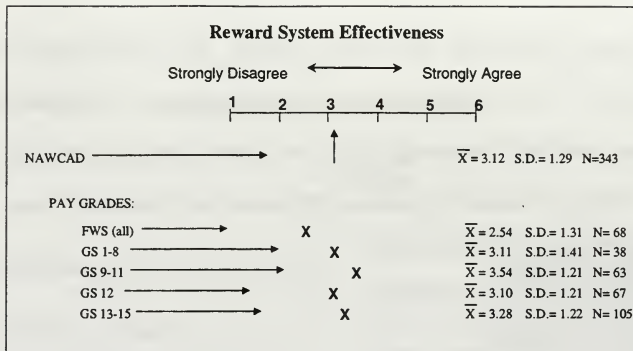


Figure 4.39. Reward System Effectiveness (Paygrades).

For seniority groups, the ANOVA results are: $[F(5,333)=2.638$ ($p<.023$)]. Group 4 (15-19yrs) has the lowest mean, with a statistically significant lower value ($p<.033$) than the means for the most junior groups (1 and 2) and Group 5 (20-25yrs). Group 4 does not have a statistically significant difference from groups 3 and 6. Refer to Fig. 4.40.

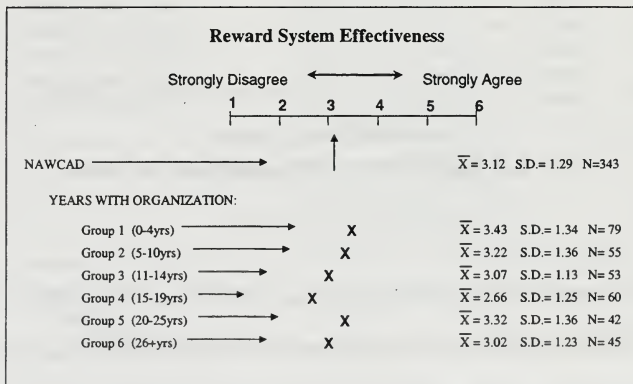


Figure 4.40. Reward System Effectiveness (Seniority groups).

Females have a higher value for this scaled variable (difference = .49) than males [t(320)=2.90, (p<.004)]. Refer to Fig. 4.41.

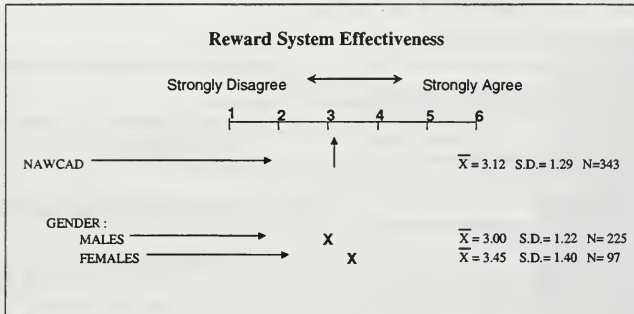


Figure 4.41. Reward System Effectiveness (Gender).

Non-whites have a higher value for reward system effectiveness (difference = .50) than whites. [t(335)=2.49,(p<.013)]. Refer to Fig. 4.42.

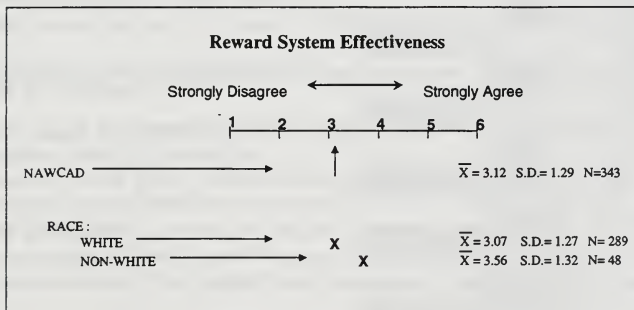


Figure 4.42. Reward System Effectiveness (Race).

For job-type groups, the ANOVA results are: $[F(2,333)=7.608 (p<.001)]$. Group 1 (Administrative/ Clerical) has the highest rating on this scaled variable, with a statistically significant higher mean value than groups 2 (Trades/Crafts) and 3 (Engineering/Science) ($p<.023$). Refer to Fig. 4.43.

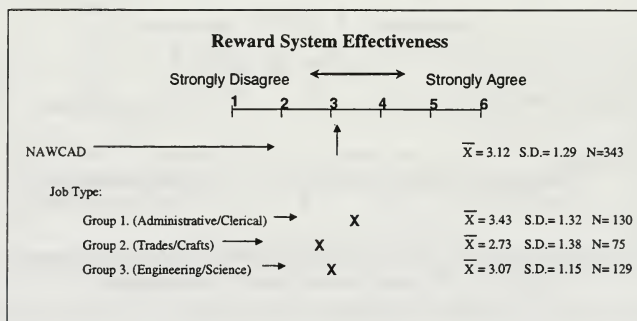


Figure 4.43. Reward System Effectiveness (Job-type).

F. REWARD SYSTEM ASSESSMENT STATEMENTS

The combined NAWCAD population means for reward system assessment statements (statements 41-68 with the exception of statements 42, 44, and 45, which were explained in the previous section, and normative policy statements 46, 51, 52, 53, 55, and 57, which will be explained in the next section) are shown in Fig. 4.44. As described in the methodology chapter, these statements relate to the employees' feelings of the system *as it currently exist*, as opposed to normative policy statements of how the system *should be*.

Seven of the statements in Fig. 4.44 have a mean above the midpoint (3.5). Statement 58, "My job is rewarding in and of itself," has the highest mean at 4.15. Fifty-

Assessment Statements

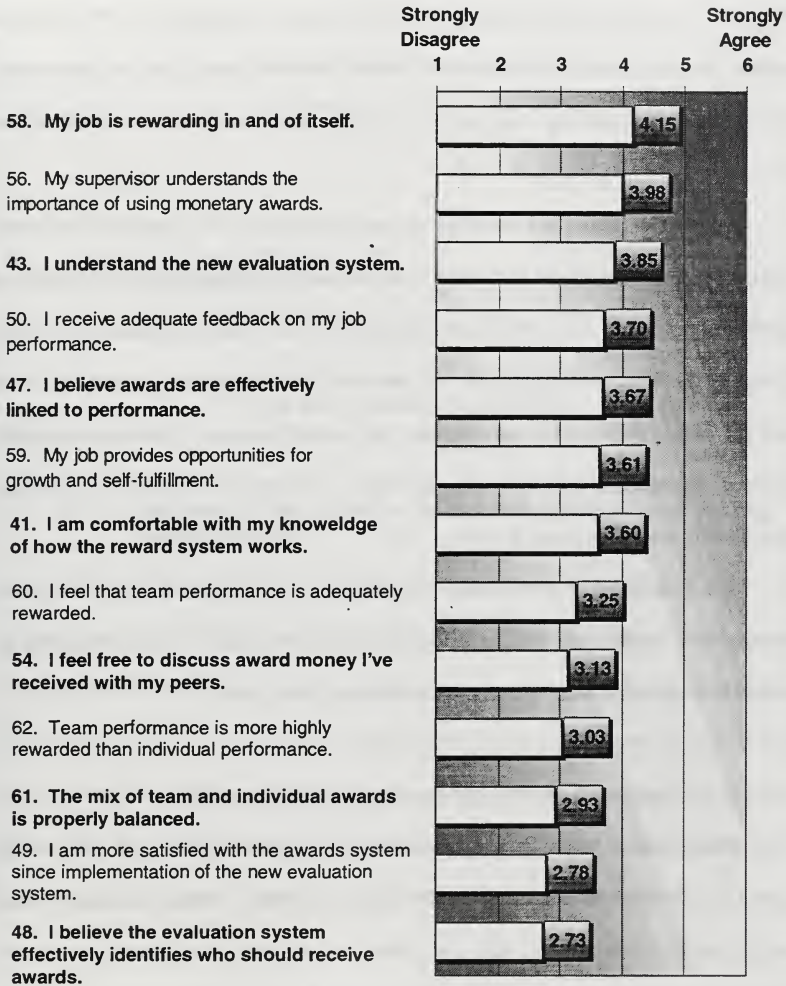


Figure 4.44. Reward System Assessment Statements (statements 41-68).

nine percent of respondents chose either Mildly Agree (4) or Agree (5). Fourteen percent marked Strongly Agree (6). Fourteen percent selected either Strongly Disagree (1) or Disagree (2). Of the six statements below the midpoint, statement 48, “I believe the evaluation system effectively identifies who should receive awards,” has the lowest mean at 2.73. For this statement, a majority (51%) either Disagreed (2) or Strongly Disagreed (1).

Statements related to knowledge and understanding of the reward and evaluation systems (items 41 and 43) are both rated above the midpoint between Mildly Disagree (3) and Mildly Agree (4). The team awards versus individual awards statements (60, 61, and 62) are all rated below the midpoint. As described in the methodology chapter, two of these statements (60 and 61) were combined in a scaled statement “Teams are adequately rewarded and balanced with individual rewards.” The combined NAWCAD population mean for this scaled statement is 3.09.

The remainder of this section presents only the significant mean differences among select demographic groups for each of these statements. The statements are covered in descending order of mean value as shown in Fig. 4.44.

1. Statement 58: My job is rewarding in and of itself.

The combined NAWCAD population mean for statement 58 is 4.15. For job-type groups, the ANOVA results are: $[F(2,339)=5.227 \text{ (} p<.006\text{)}]$. Group 1 (Administrative/Clerical) has the lowest mean, with a statistically significant lower value ($p<.001$) than the mean for Group 3 (Engineering/Science), which has the lowest mean. Group 1

(Trades/Crafts) does not have a statistically significant difference from either of the other two groups. Refer to Fig. 4.45.

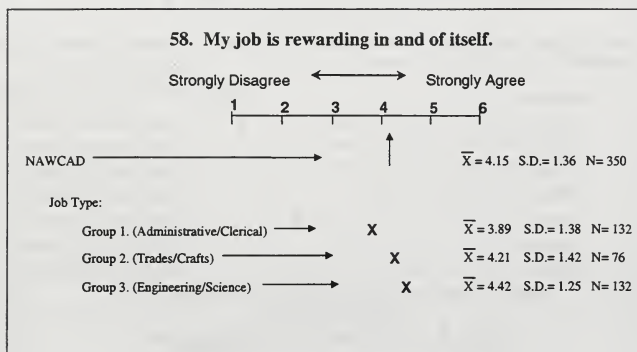


Figure 4.45. Statement 58 (Job-type).

2. Statement 56: My supervisor understands the importance of using monetary awards.

The combined NAWCAD population mean for statement 56 is 3.98. For competencies, the ANOVA results are: $[F(6,338)= 3.624 (p<.002)]$. The mean for Competency Five has a statistically significant lower value ($p<.003$) than the means for Competencies One, Two, and Seven. Competencies One and Two have the highest rating on this statement, with a statistically significant higher mean value than Competencies Three, Four, Five, and Eight ($p<.038$). Competency Seven has a statistically significant higher value than competencies Three and Five ($p<.045$). Refer to Fig. 4.46.

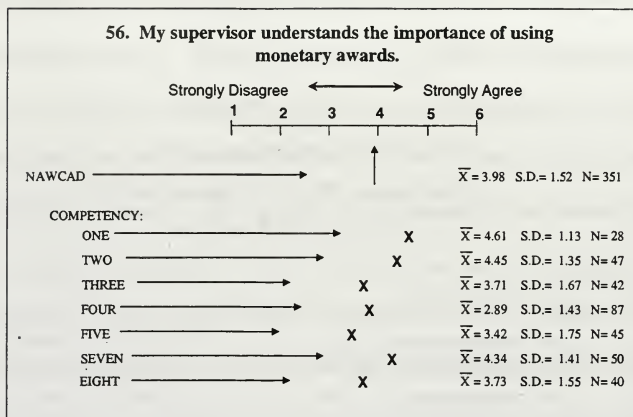


Figure 4.46. Statement 56 (Competencies).

Across paygrades, the ANOVA results are: $[F(4,348) = 8.099 \text{ (} p < .000)]$. The mean for the FWS group has a statistically significant lower value ($p < .013$) than the means for all other groups. Refer to Fig. 4.47.

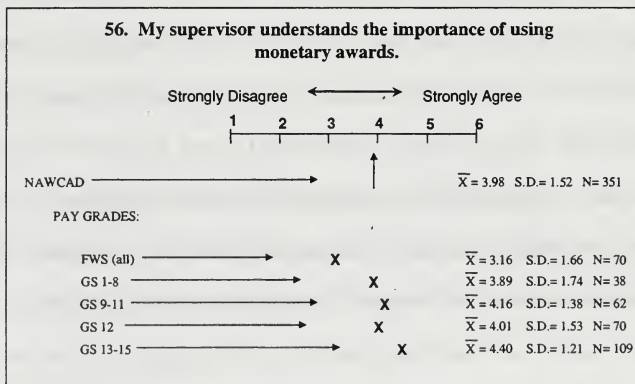


Figure 4.47. Statement 56 (Paygrades).

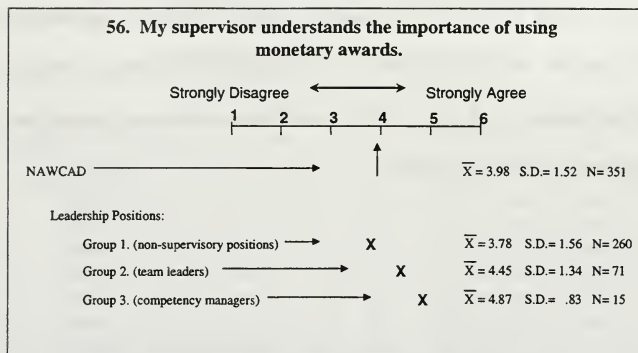


Figure 4.49. Statement 56 (Leadership positions).

3. Statement 43: I understand the new evaluation system.

The combined NAWCAD population mean for statement 43 is 3.85. Among competencies, the ANOVA results are: $[F(6,336) = 3.886 \text{ (} p < .001 \text{)}]$. The mean for Competency Eight has a statistically significant lower value ($p < .008$) than the means for Competencies One, Three, and Seven. Competency One has the highest rating on this statement, with a statistically significant higher mean value than Competencies Four and Eight ($p < .003$). Refer to Fig. 4.50.

For leadership positions, the ANOVA results are: $[F(2,344) = 15.593 \text{ (} p < .000 \text{)}]$. The means for all these groups have a statistically significant difference from each other ($p < .000$). Non-supervisors have the lowest evaluation of their knowledge of how the reward system works. Competency managers report the highest level of knowledge with team leaders between the other two groups. Refer to Fig. 4.51.

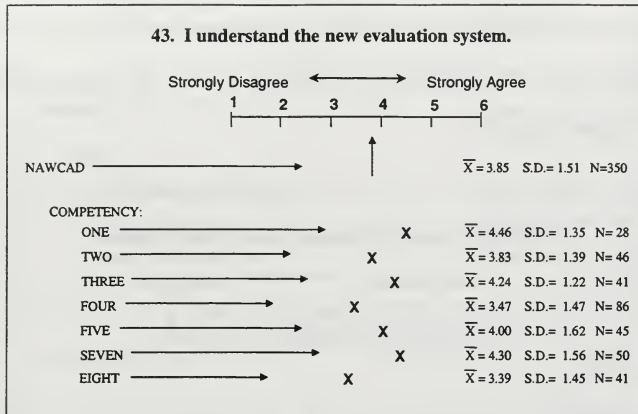


Figure 4.50. Statement 43 (Competencies).

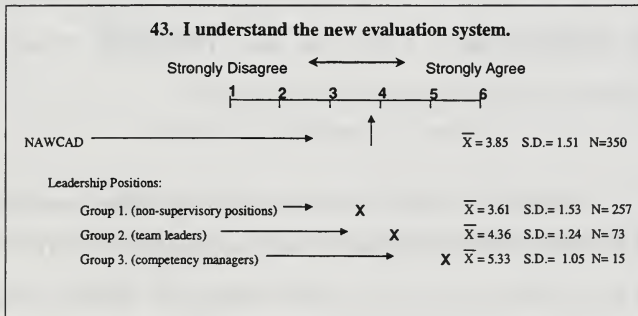


Figure 4.51. Statement 43 (Leadership Positions).

4. Statement 50: I receive adequate feedback on my job performance.

The combined NAWCAD population mean for statement 50 is 3.70. Non-whites have a higher value for statement 50 (difference = .52) than whites [$t(343)=2.18$, ($p<.030$)]. Refer to Fig. 4.52.

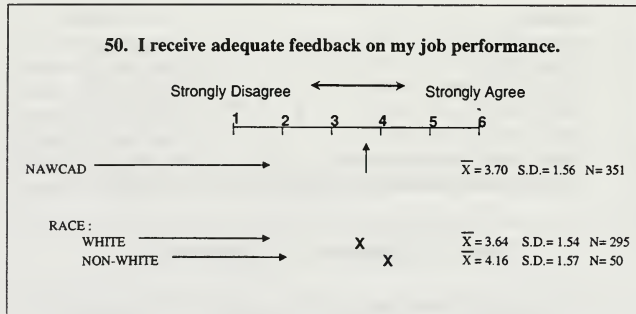


Figure 4.52. Statement 50 (Race).

For job-type groups, the ANOVA results are: [$F(2,341)= 4.096$ ($p<.017$)]. Administrative/Clerical (Group 1) has the highest rating on this statement, with a statistically significant higher mean value than Trades/Crafts (Group 2) and Engineering/Science (Group 3) ($p<.029$). Refer to Fig. 4.53.

5. Statement 47: I believe awards are effectively linked to performance.

The combined NAWCAD population mean for statement 47 is 3.67. Patuxent River, MD has a higher value for this statement (difference = .44) than Lakehurst, NJ [$t(349)= 2.38$, ($p<.018$)]. Refer to Fig. 4.54.

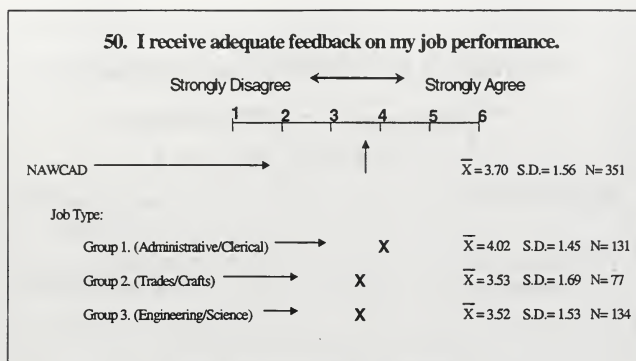


Figure 4.53. Statement 50 (Job-type).

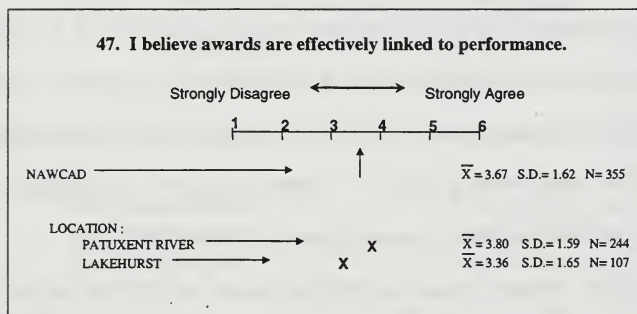


Figure 4.54. Statement 47 (Location).

Non-whites have a higher value for this statement (difference = .51) than whites
 $[t(347)=2.10, (p<.036)]$. Refer to Fig. 4.55.

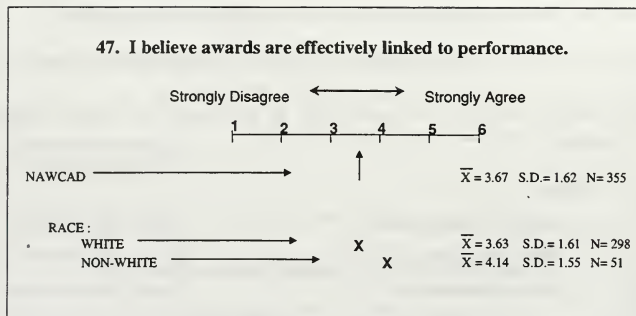


Figure 4.55. Statement 47 (Race).

6. Statement 59: My job provides opportunities for growth and self-fulfillment.

The combined NAWCAD population mean for statement 59 is 3.61. Among leadership positions, the ANOVA results are: $[F(2,350)=3.114 \text{ (} p<.05\text{)}]$. The mean for the non-supervisor group (1) has a statistically significant lower value ($p<.016$) than the mean for the team leader group (2). Neither group has a statistically significant difference from the competency manager group (3). Refer to Fig. 4.56.

Between job-type groups, the ANOVA results are: $[F(2,345)=6.898 \text{ (} p<.001\text{)}]$. Group 2 (Trades/Crafts) has the lowest mean, with a statistically significant lower value ($p<.003$) than the means for Group 1 (Administrative/Clerical) and Group 3 (Engineering/Science), which do not have a statistically significant difference between them. Refer to Fig. 4.57.

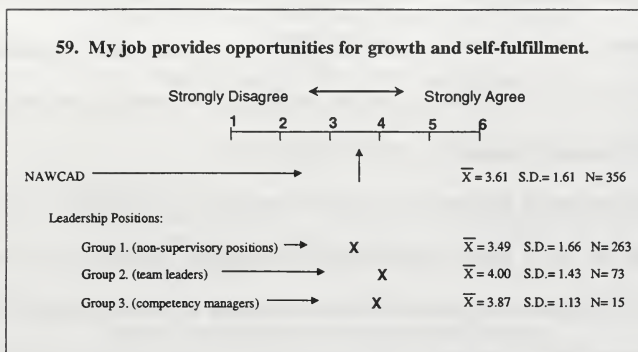


Figure 4.56. Statement 59 (Leadership positions).

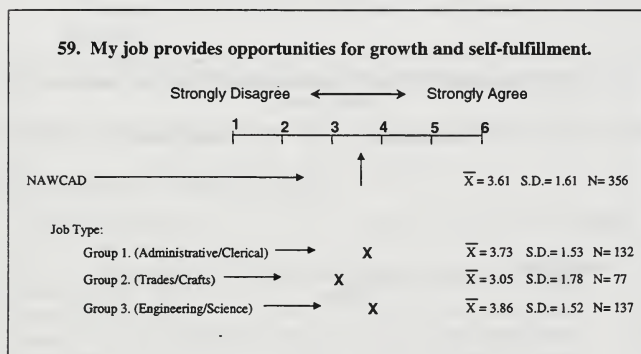


Figure 4.57. Statement 59 (Job-type).

7. Statement 41: I am comfortable with my knowledge of how the reward system works.

The combined NAWCAD population mean for statement 41 is 3.60. For competencies, the ANOVA results are: $[F(6,344)= 2.406$ ($p<.027$)]. The mean for Competency Eight has a statistically significant lower value ($p<.008$) than the means for

Competencies One and Seven. Competency One and Seven have the highest ratings on this statement, with statistically significant higher mean values than Competencies Four and Eight ($p < .010$). Competency One does not have a statistically significant difference from the remaining competencies. Refer to Fig. 4.58.

For leadership positions, the ANOVA results are: $[F(2,352)=11.177 \text{ (} p < .000 \text{)}]$. The means for all of these have statistically significant differences from each other ($p < .018$). Non-supervisors have the lowest evaluation of their knowledge of how the reward system works. Competency managers report the highest level of knowledge with team leaders between the other two groups. Refer to Fig. 4.59.

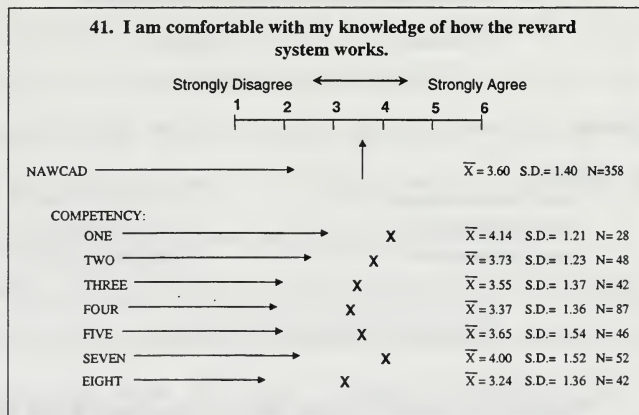


Figure 4.58. Statement 41 (Competencies).

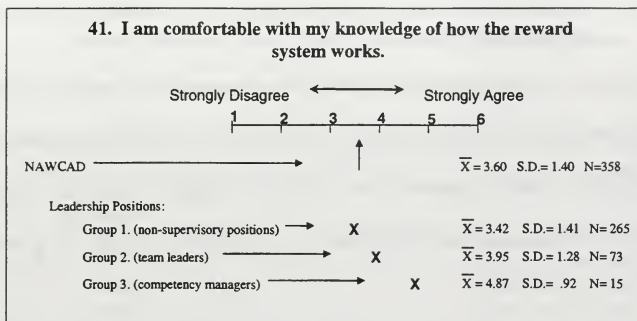


Figure 4.59. Statement 41 (Leadership positions).

8. Statement 54: I feel free to discuss reward money I've received with my peers.

The combined NAWCAD population mean for statement 54 is 3.13. Lakehurst, NJ has a higher value (difference = .48) on statement 54 than Patuxent River, MD [$t(349)=2.78$, ($p<.006$)]. Refer to Fig. 4.60.

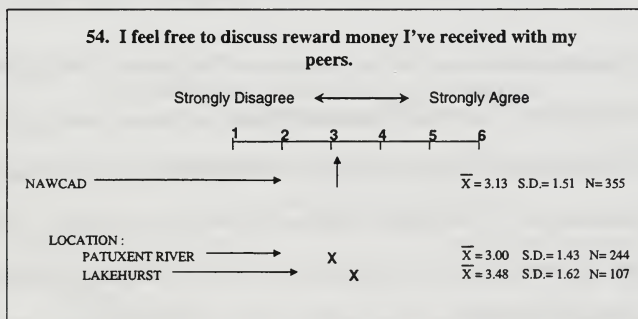


Figure 4.60. Statement 54 (Location).

9. Scaled Variable: Teams are adequately rewarded and balanced with individual rewards.

A 2-item measure (statements 60 and 61) of team-based rewards was created and used for this analysis (see Methodology). The combined NAWCAD population mean for this statement is 3.09. Patuxent River, MD has a higher value for this statement (difference = .41) than Lakehurst, NJ [$t(346)=2.812$, ($p<.005$)]. Refer to Fig. 4.61.

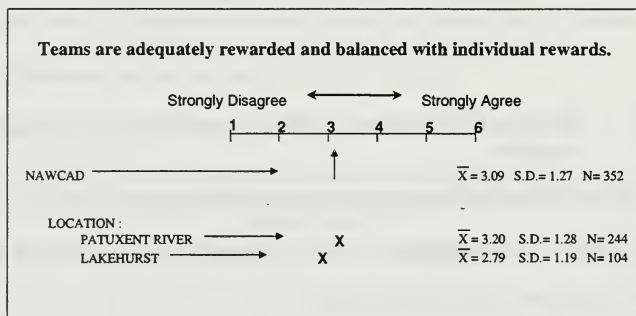


Figure 4.61. Scaled variable of team-based awards (Location).

For competencies, the ANOVA results are: [$F(6,339)= 3.291$ ($p<.004$)]. The mean for Competency Three has a statistically significant lower value ($p<.05$) than the means for Competencies Two, Four, and Seven. Competency Two has the highest rating on this statement, with a statistically significant higher mean value than Competencies Three, Four, and Five ($p<.038$). Competency Seven has a statistically significant higher value than Competencies Three, Five, and Eight ($p<.030$). Competency Two does not have a statistically significant difference from Competencies One, Seven, and Eight. Refer to Fig. 4.62.

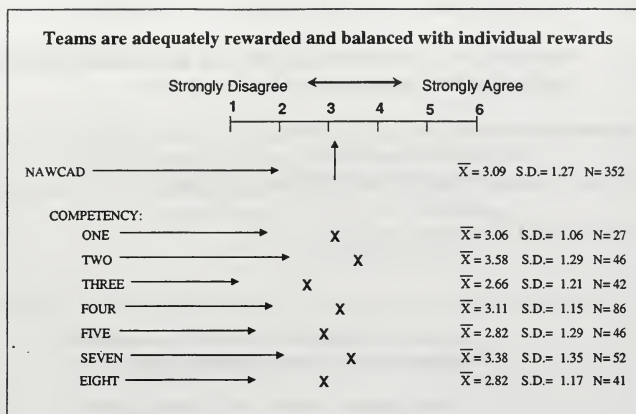


Figure 4.62. Team and Individual Reward Balance (Competencies).

10. Statement 62: Team performance is more highly rewarded than individual performance.

The combined NAWCAD population mean for statement 62 is 3.03. Patuxent River, MD has a higher value for this statement (difference = .37) than Lakehurst, NJ [$t(345) = 2.28$, ($p < .023$)]. Refer to Fig. 4.63.

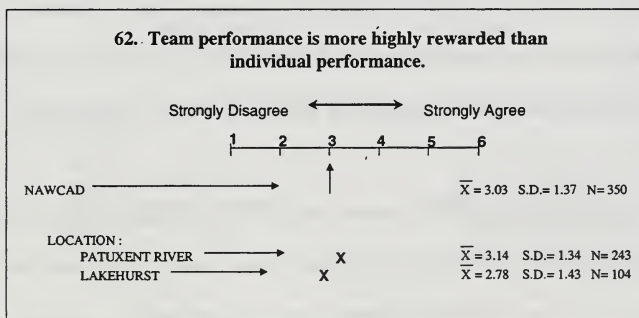


Figure 4.63. Statement 62 (Location).

11. Statement 49: I am more satisfied with the awards system since implementation of the new evaluation system.

The combined NAWCAD population mean for statement 49 is 2.78. Patuxent River, MD has a higher value for this statement (difference = .40) than Lakehurst, NJ [$t(342)=2.56$, ($p<.011$)]. Refer to Fig. 4.64.

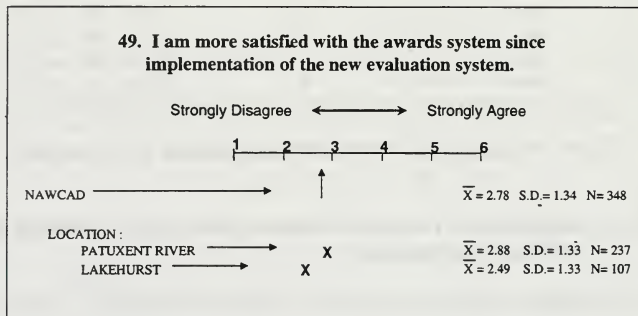


Figure 4.64. Statement 49 (Location).

Among competencies, the ANOVA results are: [$F(6,334)=2.560$ ($p<.019$)]. Competency Two has the highest rating on this statement, with a statistically significant higher mean value than Competencies Three, Four, Five, Six, Seven, and Eight ($p<.023$), but do not have a statistically significant difference from Competency One. Refer to Fig. 4.65.

For paygrades, the ANOVA results are: [$F(4,345)=3.558$ ($p<.007$)]. The mean for the GS 12 group has a statistically significant lower value ($p<.016$) than the means for GS 1-8, GS 9-11, and GS 13-15 groups, but does not have a statistically significant difference from the FWS group. The GS 1-8 group has the highest rating on this

statement, with a statistically significant higher mean value than the FWS and GS 12 groups ($p < .034$). Refer to Fig. 4.66.

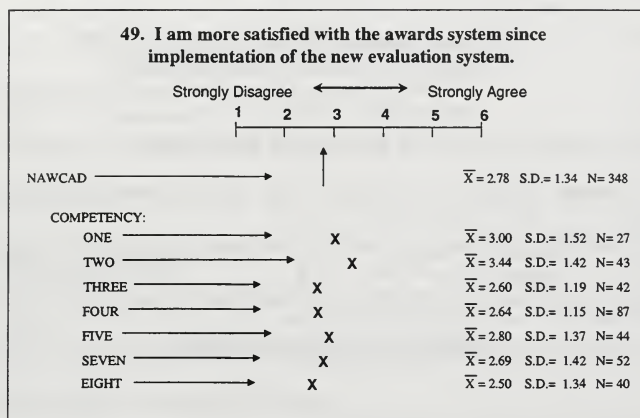


Figure 4.65. Statement 49 (Competencies).

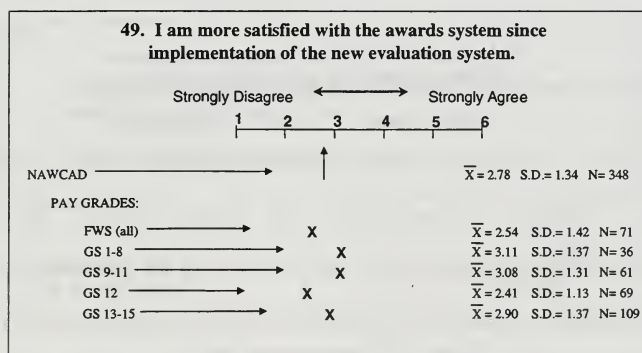


Figure 4.66. Statement 49 (Paygrades).

Females have a higher value for statement 49 (difference = .42) than males
 $[t(325)=2.63, (p<.009)]$. Refer to Fig. 4.67.

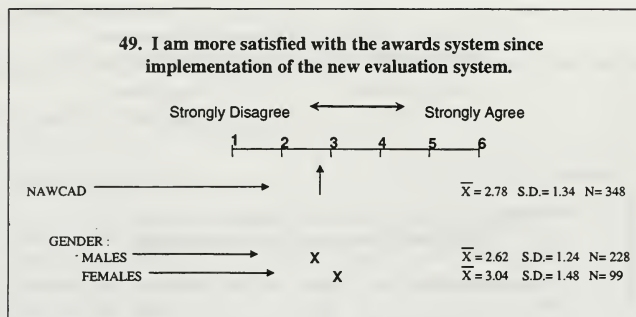


Figure 4.67. Statement 49 (Gender).

Non-whites have a higher value for statement 49 (difference = .44) than whites
 $[t(340)=2.18, (p<.030)]$. Refer to Fig. 4.68.

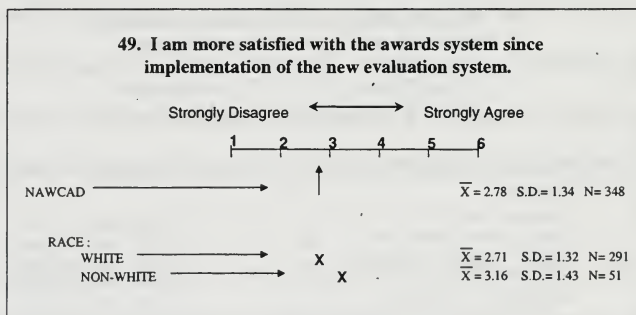


Figure 4.68. Statement 49 (Race).

G. REWARD SYSTEM NORMATIVE STATEMENTS

The combined NAWCAD population means for reward system normative statements (items 46, 51, 52, 53, and 57) are shown in Fig. 4.69. As described in the methodology chapter, these statements relate to the employees' view of how the reward system *should* work, instead of the way it *actually* works.

Statement 57 has the highest mean of both normative and assessment statements. Eighty-one percent of respondents either Agreed (5) or Strongly Agreed (6) with the statement, "Praise from my immediate supervisor is important to me." Statement 51, "I believe that award money should be equally distributed to all workers regardless of performance," received the lowest rating of all normative and assessment statements, with fifty-one percent Strongly Disagreeing (1).

Each of the normative statements have a statistically significant difference from each other ($p < .006$) with the exception of statements 55 and 52. Among select demographic subgroups, some statistically significant differences occurred for statements 51, 53 and 57.

1. **Statement 57: Praise from my immediate supervisor for work well done is important to me.**

The combined NAWCAD population mean for statement 57 is 5.05. For job-type groups, the ANOVA results are: $[F(2,345)=3.576 \text{ } (p<.029)]$. Group 3 (Engineering/Science) has the lowest mean, with a statistically significant lower value ($p<.008$) than the mean for Group 1 (Administrative/ Clerical), which has the highest mean. Group 2 (Trades/ Crafts) does not have a statistically significant difference from either of the other two groups. Refer to Fig. 4.70.

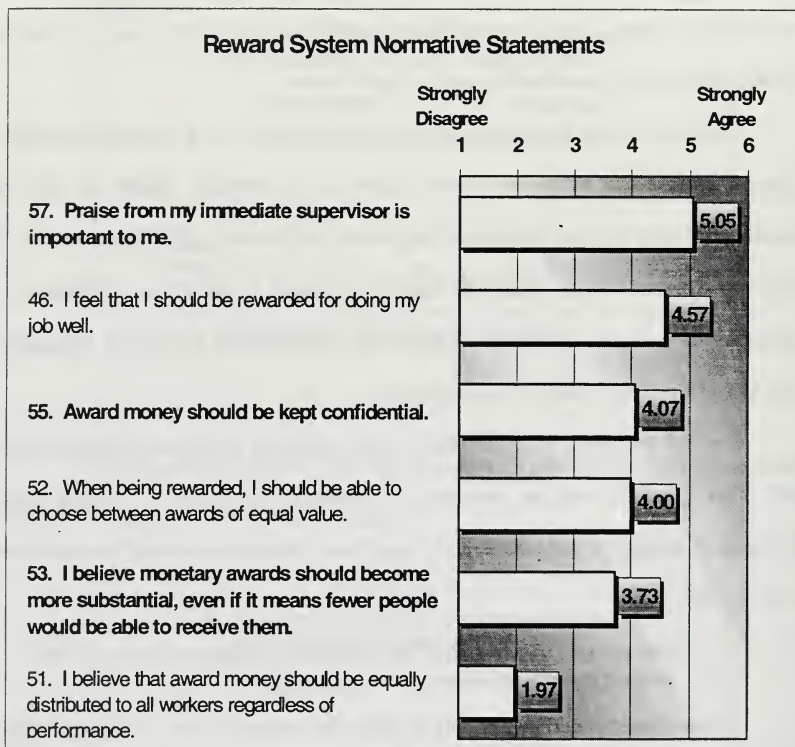


Figure 4.69. Reward system normative statements.

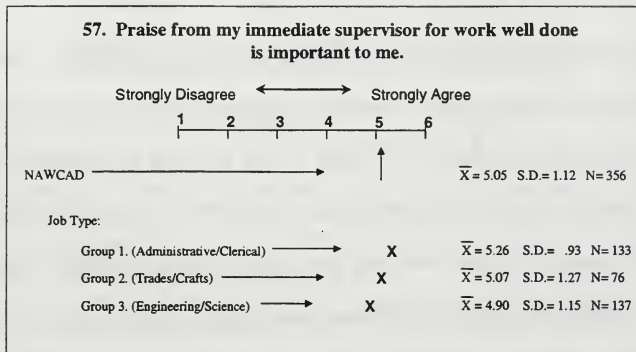


Figure 4.70. Statement 57 (Job-type).

Females have a higher value on this statement (difference = .46) than males [t(334)=3.43, (p<.001)]. Refer to Fig. 4.71.

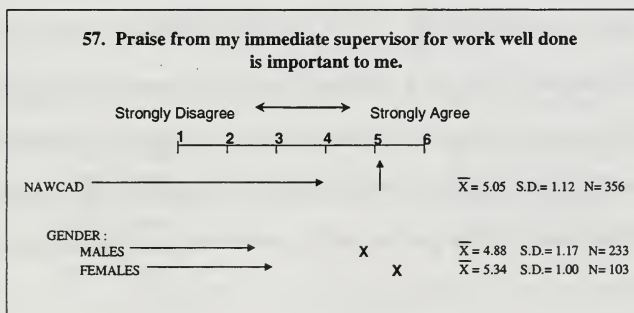


Figure 4.71. Statement 57 (Gender).

2. Statement 53: I believe monetary awards should become more substantial even if that means fewer people would be able to receive them.

The combined NAWCAD population mean for statement 53 is 3.73. Among leadership positions, the ANOVA results are: $[F(2,351)=3.692 \text{ (} p<.026\text{)}]$. The mean for non-supervisors (Group 1) has a statistically significant lower value ($p<.019$) than the mean for team leaders (Group 2). Group 1 does not have a statistically significant difference from competency managers (Group 3) ($p<.109$). The mean for Group 2 has a statistically significant higher value than the mean for Group 1 ($p<.019$). Group 2 does not have a statistically significant difference from Group 3. Refer to Fig. 4.72.

For age groups, the ANOVA results are: $[F(5,344)=3.206 \text{ (} p<.008\text{)}]$. Group 5 (50-54yrs) has the lowest mean and is significantly lower ($p<.037$) than the means for Group 2 (35-39yrs) and Group 3 (40-44yrs). Group 2 has the highest rating on this statement, with a statistically significant higher mean value than Group 1 (21-34yrs), Group 4 (45-49yrs), Group 5 (50-54yrs), and Group 6 (55+yrs) ($p<.014$). Refer to Fig. 4.73.

Among competencies, the ANOVA results are: $[F(6,343)= 2.225 \text{ (} p<.04\text{)}]$. The mean for Competency Two has a statistically significant lower value ($p<.008$) than the means for Competencies One, Four, Seven, and Eight. Competency Two does not have a statistically significant difference from Competencies Three and Five. Competency One has the highest rating on this question, with a statistically significant higher mean value than Competencies Two and Three ($p<.010$). Refer to Fig. 4.74.

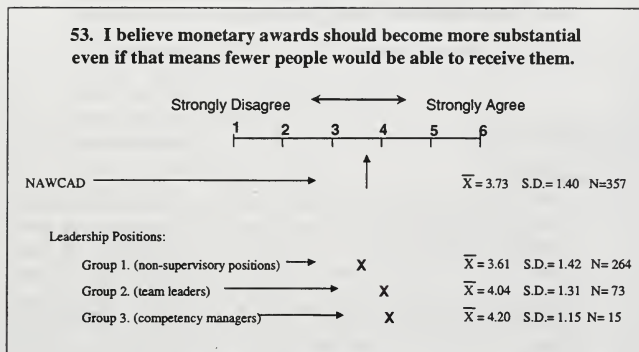


Figure 4.72. Statement 53 (Leadership Positions).

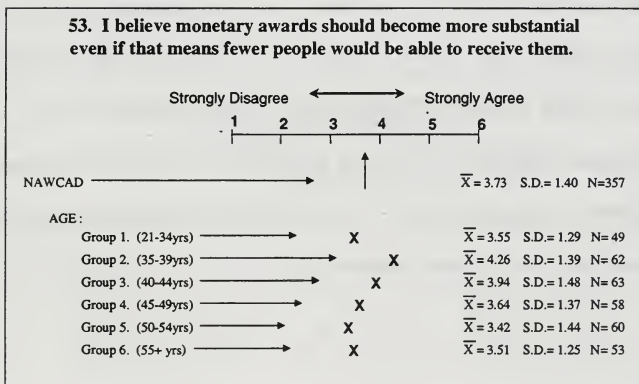


Figure 4.73. Statement 53 (Age groups).

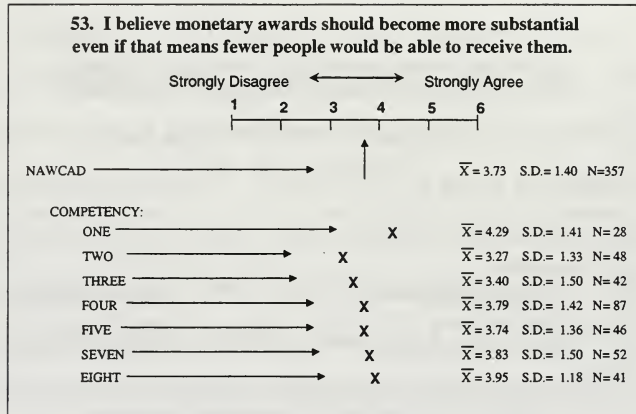


Figure 4.74. Statement 53 (Competencies).

3. Statement 51: I believe award money should be equally distributed to all workers regardless of performance.

The combined NAWCAD population mean for statement 51 is 1.97. Among leadership positions, the ANOVA results are: $[F(2,344)=3.868$ ($p<.022$)]. Non-supervisors (Group 1) have the highest rating on this statement, with a statistically significant higher mean value than Group 2 ($p<.019$). The difference between Group 1 and competency managers (Group 3) is not statistically significant at the ninety-five percent confidence level ($p<.086$). Refer to Fig. 4.75.

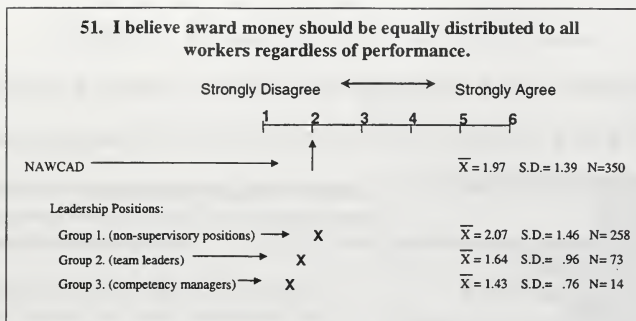


Figure 4.75. Statement 51 (Leadership positions).

For paygrades, the ANOVA results are: $[F(4,347)=4.444$ ($p<.002$)]. The mean for the GS 13-15 group has a statistically significant lower value ($p<.018$) than the means for the FWS, GS 1-8, and GS 9-11 groups, but does not have a statistically significant difference from the GS 12 group. The GS 1-8 group has the highest rating on this statement, with a statistically significant higher mean value than the GS 12 and GS 13-15 groups ($p<.017$). Refer to Fig. 4.76.

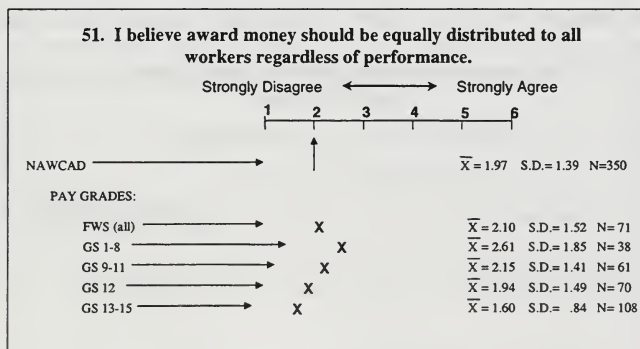


Figure 4.76. Statement 51 (Paygrades).

H. COMPETENCY MANAGER AND TEAM LEADER STATEMENTS

The last six statements on the survey were reserved for competency managers and team leaders. With the exception of statement 66, these are assessment statements. The means for these statements are illustrated in Fig. 4.77. The frequencies and percentage of response are in Appendix B.

Statement 63, "Differences in rules and regulations across competencies make it difficult to equitably reward members of the same team," received the highest rating in this group. Thirty-five percent of respondents chose Agree (5), another twenty-four percent chose Strongly Agree (6), while twenty-eight percent chose Mildly Agree (4). Statement 64, "The new evaluation system has made it easier for me to reward employees," received the lowest rating.

Statement 65, "I am satisfied with the time between nomination and approval of awards," is the only statement with a statistically significant difference between competency managers and team leaders. Competency managers have a higher value (difference = .77) for this statement than do team leaders [$t(76)=2.17$, ($p<.033$)]. Refer to Fig. 4.78.

Competency Manager and Team Leader Statements

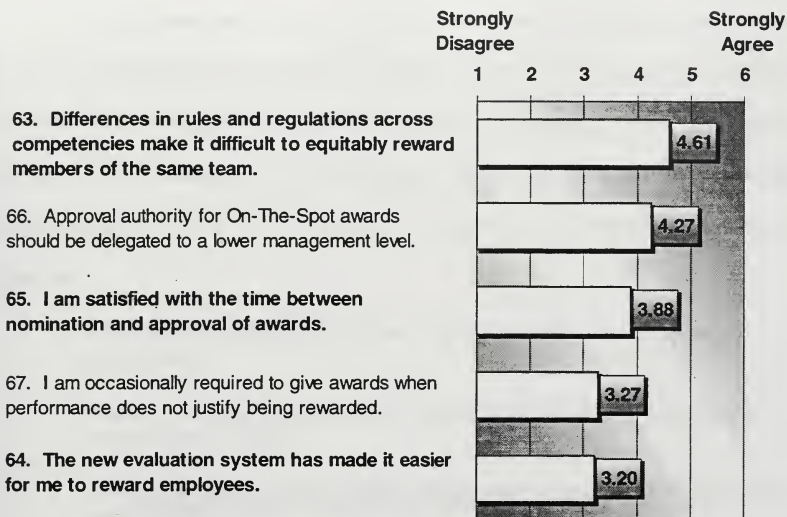


Figure 4.77. Competency Manager and Team Leader Statements.

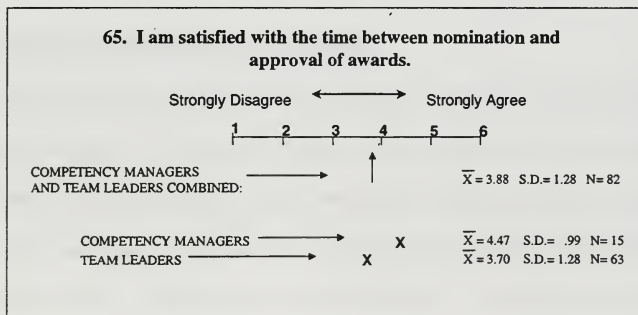


Figure 4.78. Statement 65 (Competency managers and team leaders).

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V. DISCUSSION

We might better understand the effectiveness of the NAWCAD's reward system by first examining the survey statement responses against some of the general guidelines for reward system management discussed at the end of the literature review. The theories discussed in the literature review (expectancy, equity, line-of-sight, and rewarding desired behavior) served as the theoretical framework for developing the general guidelines:

- Rewards should have a high valence (value, desirability) to the employee (Expectancy).
- Employees should be able to see the connection between performance and rewards (Line-of-sight).
- Rewards should be given equitably. Equal performances should receive equal rewards (Equity).
- Performance measures used for reward criteria must be appropriate for the goals of the organization (Rewarding desired behaviors).
- The reward policy must be communicated to and understood by the workforce to be effective (an element of expectancy and line-of-sight).

A. VALENCE OF OFFERED REWARDS

A key aspect of expectancy theory is the level of valence an employee places on performance outcomes. The level of valence, in turn, effects the level of motivation to work. Valence levels can be positive, zero, or negative. Each reward listed on the survey (items 14-26) was rated by respondents on a range between Highly Undesirable (1) and Highly Desirable (6). If we set the midpoint (3.5) as zero, 6 would be the most positive

level of valence, while a response of 1 would be the most negative level. The valence level for each reward may be derived from Fig. 4.1.

Monetary rewards receive the highest valence. Over 75 percent of respondents rated each of the monetary rewards in the desirable range (Appendix C, Table C.1). The system assessment statement (56) "My supervisor understands the importance of using monetary rewards," received a rating of 3.98 (4 = Mildly Agree) (Appendix C, Table C.4). So, not only do employees have a positive valence for monetary awards, they also report that their supervisors know that monetary rewards are regarded positively.

The valence for monetary rewards is such that 57 percent of the survey respondents agreed (mildly to strongly) with statement 53, "I believe monetary awards should become more substantial even if it means that fewer people would be able to receive them (Appendix C, Table C.4)." In contrast, as discussed later in this chapter, Competency Two appears to have the highest rating of reward system effectiveness despite the lowest average monetary value per award. The significant feature of Competency Two's use of the reward system is that it also has the highest number of awards to employee ratio among competencies.

The apparent desire for increasing the size of monetary rewards can be compared with the response to statement 51, "I believe that award money should be equally distributed to all workers regardless of performance," where 52 percent strongly disagreed (1) (Appendix C, Table C.3). A theme among focus groups and interviewees was a dislike for an *even* distribution of awards versus a *thoughtful* distribution.

While it may be no surprise that monetary rewards are at the top of the list, it may be surprising to find educational and training opportunities listed before time-off and recognition rewards. Although time-off awards were given a positive valence, some interviewees and focus group participants were uncomfortable with taking time off. The work they leave behind while they take time off becomes a burden on someone else, or put off until their return. One survey respondent wrote, "If I take time off, who will do my job?" Two focus group participants mentioned that they had never received a time-off award and could not recall that they had ever seen one given to anyone.

Table A.1 in Appendix A shows that time-off awards were not fully utilized (79.3%) compared to monetary rewards use (98.6%). This may indicate that despite the relatively high valence of time-off awards, they represent an underutilized resource in the reward system.

The ratings for recognition rewards were clustered around the midpoint of the scale with "employee of the month, quarter, year, etc." below the midpoint at 3.33, with "honorary recognition" above the midpoint at 3.92. The degree of desirability of public recognition appears to be inversely proportional to the number of people involved. The smaller the public arena, the more desirable the recognition becomes. Generally, the data indicates that a small group of peers and the immediate supervisor may be preferable to larger group settings.

All but three of the rewards on the list (Fig. 4.1) have a positive valence. The three rewards with valence means below the midpoint (3.5) are "large public

recognition,” which was rated above “employee of the month” and “personalized items” at the bottom of the list.

Understanding what the employee wants (valence) is only part of the expectancy picture. Each employee was asked to rate the same rewards in terms of satisfaction with NAWCAD’s handling of those rewards. These results are illustrated in Fig. 4.16. A comparison of these results with the results for reward valence is in Fig. 4.34.

In this comparison, only personalized items received a satisfaction score higher than the corresponding desirability score. A few interviewees and focus group participants were enthusiastic about the personalized items they had received. For these people such items (photos, paperweights, neckstraps, etc.) are displayed with pride. None of the interviewees or focus group participants suggested eliminating these types of rewards. However, it is noteworthy that 30 percent of those surveyed rated personalized items as highly undesirable (rated as “1”) and 72 percent rated these items somewhere in the “undesirable” range (Appendix C, Table C.1).

The highest level of satisfaction was given to the NAWCAD’s handling of On-The-Spot Small Cash awards at 3.55. This was the only satisfaction level above the midpoint. The lowest satisfaction level was given to the NAWCAD’s use of Quality Step Increases. The gap between satisfaction and desirability for the recognition rewards (average mean difference = .52) is relatively small compared to the gap for monetary rewards (mean difference = 2.00).

In terms of Expectancy theory (Refer to Fig. 2.3), a strength of the NAWCAD’s reward system is that it offers several rewards of high valence (extrinsic outcomes) to

employees. On the other hand, the low levels of satisfaction with the NAWCAD's handling of rewards (especially monetary) suggest that the feedback loop between outcome satisfaction and motivation is weak. As a result, motivation is not being positively reinforced by reward experience.

B. LINE-OF-SIGHT BETWEEN PERFORMANCE AND REWARD

Line-of-sight between performance and reward exists when an employee has reason to believe that a certain performance level will be rewarded by the employer. This belief is established by the employer's past actions witnessed by the employee, and/or the degree to which the link between performance and reward is identified in the awards instruction and the employer's past adherence to the instruction. Performance must, of course, be evaluated before it can be rewarded.

Although 57 percent of survey respondents were in one of the three agreement categories (with 29 percent of these only "mildly" agreeing), the mean level of agreement/disagreement on statement 45, "I believe that if I achieve a high level of performance the organization will reward me," fell below the midpoint at 3.41. This is in part explained by both the weak agreement and the 34 percent who either disagreed (2) or strongly disagreed (1) with the statement (Appendix C, Table C.3). On the other hand, the more direct statement (47), "I believe awards are effectively linked to performance," had a somewhat higher level of agreement at 3.67, with 36 percent agreeing (5) or strongly agreeing (6) with the statement, indicating that a line-of-sight between performance and reward exists to some degree even if high performance is not always rewarded (Appendix C, Table C.3).

The NAWCAD recently switched from a five-level evaluation system to an Acceptable/Unacceptable evaluation system. Correspondingly, the NAWCAD superseded its own awards instruction (Naval Air Warfare Center Aircraft Division, 1996) with the new draft NAVAIR awards instruction (Naval Air Systems Command). The old reward instruction emphasized Performance Awards (one-time cash bonuses or Quality Step Increases) based on the five-level evaluation system. The new reward instruction does not have a so-called Performance Award, though GS employees are still eligible for Quality Step Increases and will be eligible for a new monetary reward, the Sustained Excellence Award, after the instruction has been approved (Hopkins, 1999). Individual employees or teams will be eligible for Sustained Excellence Awards if their supervisor determines that they have maintained some level of performance far in excess of the requirements for an acceptable evaluation.

Two statements, "I believe the evaluation system effectively identifies who should receive awards (statement 48)," and "I am more satisfied with the awards system since implementation of the new evaluation system (statement 49)," were included in the survey to gauge opinion on the new evaluation system with respect to the reward system. Both statements fell into the range of disagreement with means of 2.73 and 2.78 respectively. Whether by design or not, the new evaluation system does not appear to help create a line-of-sight between performance and reward. On the other hand, statement 50, "I receive adequate feedback on my job performance," was rated above the midpoint at 3.70, indicating that employees are receiving at least some acknowledgement

of their performance. Such acknowledgement might be helpful in establishing line-of-sight.

C. REWARD SYSTEM FAIRNESS

Statement 42, "I think the reward system is fair and equitable," is the only statement that tests this aspect directly. The mean for statement 42 falls below the midpoint at 2.90. One focus group participant sensed inequity with NAVAIR counterparts doing the same jobs. The NAVAIR counterparts in this employee's view were being rewarded substantially more for doing the same work. In reference to Fig. 2.4, the danger in this situation is that an "under-rewarded" NAWCAD employee may reduce input (work) in comparison to the "rewarded" NAVAIR employee in order to restore a sense of equity.

Another focus group participant told of how a competency manager "gave himself" a 3,000-dollar reward while most people working under him received less. A limited number of people working under this competency manager were given awards with amounts ranging between 1,500 and 3,000 dollars. The same focus group participant contrasted this situation to another example wherein a competency manager took a smaller reward than everyone else did. The rewards in the second example were mostly 500-dollar rewards with more people receiving them. The competency manager in the latter case received a smaller percentage of his pay as a reward in comparison to his workforce. The focus group participant giving the comparison implied that the second situation seemed fairer to the workforce than in the first situation. The second case seems to be an instance of a manager trying to ensure that a negative inequity for the

manager (a smaller percentage of pay as reward) results in a positive inequity for the workforce (reward equal to or greater than the manager's reward). The inequity thus favored the less powerful members of the organization (Jain & Triandis, 1990).

Indirectly, the response to statement 51 indicates that employees find it an injustice to equally distribute monetary awards making them independent of performance. An even distribution is counter to what equity theory suggests as an ideal system of rewards (Adams, 1965).

D. REWARDING THE RIGHT (DESIRED) BEHAVIOR

A study of the NAWCAD's performance measures as a basis for rewards is outside the scope of this thesis. However, the emphasis on teams at the NAWCAD makes it worthwhile to determine if the reward system encourages teamwork as a desired behavior. Three statements (60-62) were designed to address this matter.

Statement 60, "I feel that team performance is adequately rewarded," and statement 61, "The mix of team and individual awards is properly balanced," were combined to form a scaled variable, "Teams are adequately rewarded and balanced with individual rewards." This scaled variable received a mean below the midpoint at 3.09. Statement 62, "Team performance is more highly rewarded than individual performance," has a mean of 3.03. Together, these results indicate that individual performance is given more consideration than team performance. If in fact individual rewards receive more emphasis than team awards; an argument could be made that the reward system, as it is used now, does not promote the desired teamwork behavior in the

organization. The reward system, as written, does allow for various types of team awards to be given.

E. UNDERSTANDING THE REWARD SYSTEM

It is not enough that a reward system exists; the people affected by it must be aware of it and understand it. Statement 41, "I am comfortable with my knowledge of how the reward system works," was rated above the midpoint at 3.60. There is anecdotal evidence from the focus groups, that this knowledge is gained primarily from experience. One focus group participant relatively new to the organization, reported that the reward system caught her by surprise. She wondered, at the time, "How do people get these [rewards]." Another said, "Nobody knows how [the reward system] works...there's not enough explanation."

What of secrecy? Secrecy hampers knowledge and understanding of the reward system. Secrecy obscures line-of-sight which prevents the reward system from motivating as it should (Lawler, 1996). Secrecy can also cause distrust of the reward system (Pelletier, 1993). On a personal level, NAWCAD employees might not desire the level of openness called for in the literature. Statement 54, "I feel free to discuss award money I've received with my peers," was rated below the midpoint at 3.13. Statement 55, "Award money should be kept confidential," came in well above the midpoint at 4.07, with forty-eight percent either agreeing (5) or strongly agreeing (6) (Appendix C, Table C.4). The context of the statements were at the personal level of how the individual feels about their own rewards and not at the organizational level. However, with respect to organizational secrecy, a focus group participant reported that in his work group, "We're

told not to brag about [monetary reward size]... to prevent jealousy.” One focus group recommended that the amount of awards money available for the year should be advertised and updated quarterly as the monies are paid out. Lawler (1981) found that, with respect to pay, 80 percent of employees preferred to keep their own pay amounts confidential while at the same time favoring public pay scales and policies (Lawler, 1981, p. 45).

F. TEAM LEADER AND COMPETENCY MANAGER STATEMENTS

The unique competency/team structure of the NAWCAD creates challenges for managers when rewarding employees. For employees working within their competency, the reward process is relatively straightforward. The process becomes more difficult when the employee is assigned out of the competency to a team controlled by another competency, or to another competency to work in a support function. Rewarding an employee in this situation requires some consultation and cooperation between competencies, so the competencies will be able to control their budgeted share of award monies. There is some flexibility allowed for rewarding an employee from one competency with money from the nominating competency, although consultation is still required to avoid duplication of awards or over-rewarding the employee. Statement 63, “Differences in rules and resources across competencies make it difficult to equitably reward members of the same team,” received a score above the midpoint at 4.61, with twenty-four percent of team leaders and competency managers strongly agreeing (6) (Appendix C, Table C.4). This relatively high level of agreement suggests that the reward system has unintentionally created barriers to equity.

Statement 64, “The new evaluation system has made it easier for me to reward employees,” was rated by team leaders and competency managers slightly below the midpoint at 3.20. As an instrument for rewarding employees, the new evaluation system received mixed reviews from focus groups and interviewees. Some believed that the evaluation system allowed greater flexibility for supervisors to reward employees, as well as reward them in a more timely fashion. On the other hand, some did not like what they perceived as a lower quality of feedback compared to the old evaluation system. A worry was expressed that the new evaluation system does not provide an accurate picture of employee performance, lumping under- and over-achievers together as “Acceptable.”

Most interviewees and focus group participants agreed that the old evaluation system was also a flawed instrument as a basis for rewards due to over-inflation of evaluations. Cash performance awards were tied to level 5 (highest) and level 4 (next highest) rated workers. As a result of over-inflation of evaluations, some supervisors apparently felt it necessary to shift employees from a level 5 to a level 4 rating when award money tied to level 5 ran out, in order to ensure that they could provide monetary rewards to those whom they felt deserved them most. Whether or not this jockeying of ratings to satisfy the bonus allocation resulted in long-term harm to the employees, with respect to promotability and job security, is unclear.

The new reward instruction stresses the importance of timeliness in rewarding employees. Overall, the level of agreement with statement 65, “I am satisfied with the time between nomination and approval of awards” was above the midpoint at 3.88. This was the only statement in this section where there was a statistically significant difference

between team leaders and competency managers. The mean for team leaders was 3.70 while the mean for competency managers was much higher at 4.47 ($p<.033$). This might be explained by the difference in time that each group spends handling the award, longer for team leaders, less for competency managers.

Statement 66, "Approval authority of On-The-Spot awards should be delegated to a lower management level," was rated above the midpoint at 4.27. This supports the findings from the focus groups and interviews where team leaders and junior level competency managers expressed a desire to have more control over the reward process for these rewards.

A sign that a reward system may be ineffective, in terms of equity and expectancy theories, is an even distribution of rewards regardless of performance. One of the focus groups felt that there was too much emphasis on distributing award money at a constant rate over the budget cycle. A resulting manifestation of this could be that otherwise unworthy performance is rewarded. One interviewee said that he must occasionally struggle to justify a reward. One survey statement was designed to test for this phenomenon. Statement 67, "I am occasionally required to give awards when performance does not justify being rewarded," scored below the midpoint at 3.27. A total of 46 percent responded somewhere in the agreement range to this question (Appendix C, Table C.5).

G. DEMOGRAPHIC (SUB-GROUP) DIFFERENCES

Statistically significant differences among sub-groups (race, gender, age, job-type, competency, location, seniority, etc.) are found throughout the data analysis. For many

of these sub-groups, there are recurring patterns of positive or negative response to the survey items and statements.

1. Race and gender

McCue and Gianakis (1997), and Ting (1997) launched their respective studies with similar hypotheses based on literature reviews that essentially stated that white males had higher levels of job satisfaction than minority females. In each study, the findings suggested that race and gender had no impact on job satisfaction. The results from the NAWCAD survey suggest that race and gender may, in fact, be positively related to job satisfaction. In all cases of statistically significant difference, minorities (categorized as non-whites) and females rated higher levels of satisfaction with the NAWCAD's use of rewards than whites and males. Males have a lower score for the scaled variable "Reward system effectiveness" than females who are just below the midpoint at 3.45. Minorities were above the midpoint at 3.56, while whites were below the midpoint at 3.07. With the exception of the scaled variable "Desirability of Monetary Awards," minorities had higher valence levels for rewards than did whites. Females also had higher valence levels for rewards than males.

Minorities may have a stronger line of sight between performance and rewards than do whites. Minorities had a mean level of agreement of 4.14 for statement 47, "I believe awards are effectively linked to performance." Whites rated this statement just above the midpoint at 3.63.

Although praise from immediate supervisors is important to most employees (statement 57), females had a mean value of 5.34 compared to males at 4.88.

2. Age

The data gathered from this research do not indicate that there is any relationship between age and satisfaction with the reward system. It may be of interest to note that the valence for time-off awards appears to decrease with age. Also, from age 35 to 55 there is a decreasing desire to make monetary rewards more substantial at the risk of fewer people receiving them (statement 53). This may be attributable to the positive relationship between age and intrinsic job satisfaction identified by other researchers (McCue & Gianakis, 1997; Ting, 1997). It could be possible that as employees grow older and have a supposed increased level of intrinsic job satisfaction, their desire to have greater extrinsic rewards at the expense of others, becomes less intense.

3. Paygrades

There were over 20 items and statements throughout the survey data where statistically significant differences among paygrades were found. The most common feature is the generally low level of satisfaction registered by FWS employees for the NAWCAD's handling of various rewards. For the scaled variable "Reward system effectiveness," the FWS employees' mean is 2.54, which is a statistically significant lower value than the means for all other paygrades. Conversely, the GS 9-11 group scored a 3.54 for this scaled variable, the only group above the midpoint.

The FWS group was the only group to rate at a mean level of disagreement with statement 56, "My supervisor understands the importance of using monetary awards." FWS employees rated this statement below the midpoint at 3.16. All other groups had stronger agreement with this statement ranging from 3.89 (GS 1-8) to 4.40 (GS 13-15).

Finally, although all the means for statement 51, “I believe award money should be equally distributed to all workers regardless of performance,” are well below the midpoint, there appears to be an inverse relationship with GS pay levels. As an employee goes up in paygrade, the employee is more likely to oppose equal distribution of monetary rewards without regard to performance. This may be an indication that higher paygrades have stronger concerns about maintaining equity than lower paygrades.

4. Job-types

Among job-types, the trades/crafts group appears to be overall less satisfied with the NAWCAD’s handling of various awards than both the administrative/clerical group and the engineering/science group. The administrative/clerical group is most satisfied with the NAWCAD’s handling of monetary rewards and scored the highest (3.43) on the scaled variable, “Reward system effectiveness.”

When controlling for gender, the patterns between job-types do not change appreciably when females are not included in the analysis. However, the means for the administrative/ clerical group (predominantly female) and the trades/crafts group fluctuate on variables where large gender differences otherwise exist. For example, two of the examined variables for job-types (the scaled variable, “Desirability of recognition rewards,” and statement 58, “My job is rewarding in and of itself”) cease to have statistically significant differences with the absence of females, though the pattern of differences among job-type groups is roughly the same.

A greater factor in shaping job-type response to the survey is the fact that among respondents, 81 percent of the trades/crafts group are FWS employees. FWS employees

only comprise 1.5 percent of administrative/clerical and 7.4 percent of engineering/science. Just over 91 percent of the FWS employees who responded to this survey work in the trades/crafts group.

When FWS employees are absent from the analysis, four major variables cease to have statistically significant differences among job-type groups: the scaled variables, “satisfaction with organizational use of monetary rewards (Fig. 4.18),” “satisfaction with organizational use of recognition rewards (Fig. 4.24),” “reward system effectiveness (Fig. 4.43),” and statement 59, “My job provides opportunities for growth and self-fulfillment (Fig. 4.45).” As may be expected, the means for the trades/crafts group shift to the right or in positive direction, causing any differences among groups to lose statistical significance. The statistically significant differences may or may not be caused by paygrade differences, the high correlation between FWS employees and the trades/crafts group makes knowing this indeterminate.

The data for the engineering/science group, when compared to the other groups, are more supportive of Muhlemeyer’s study of large R&D labs (1992) than the work of Jain and Triandis (1990). Based on the scaled variable “Desirability of recognition rewards,” engineers and scientists do not, in contrast to what Jain and Triandis (1990) suggest, seem to crave visibility any more than the other job-type groups. There were no statistically significant differences among job-types for desirability of recognition rewards.

Muhlemeyer (1992) found that R&D workers in large labs cared little for the “pat on the back” from their supervisors. In this study, the engineering/science group rated

statement 57, "Praise from my immediate supervisor is important to me," lower than did the other two groups, though still well above the midpoint at a mean of 4.90. This study indicates that this very personal form of recognition may, as Muhlemeyer (1992) suggests, have less meaning for engineers and scientists than other job-types, but only in relative terms.

5. Competencies

With few exceptions, Competency Two rated the highest satisfaction levels for most rewards. Competency Two also had the highest mean rating for the scaled variable "Reward system effectiveness" at 3.73, the only competency above the midpoint (3.5) and statistically significantly higher than all other competencies with the exception of Competency Seven. Appendix A provides a breakdown of the NAWCAD's FY99 award allotments by competency. Dividing the number of monetary awards given by the number of employees in the competency provides an average number of monetary awards per employee. Competency Two has the highest monetary award to employee ratio of all the competencies at 2.43. The average basic pay (total basic pay divided by number of employees) of Competency Two employees is \$44,910. Only two competencies have lower average basic pay. The average monetary award (money spent divided by number of awards) for Competency Two is \$227, the lowest of all competencies. As a percentage of average basic pay (average monetary award divided by average basic pay), the average monetary award is roughly less than one half a percentage point, also the lowest of all competencies. But, the rate at which awards are given is the highest among all competencies. In other words, while the rewards are smaller in both dollar value and

percentage of basic pay, the likelihood of receiving a reward is the highest of all competencies. Compare these facts to statement 53, "I believe monetary awards should become more substantial even if that means fewer people would be able to receive them." Competency Two had the strongest level of disagreement with this statement at a mean of 3.20.

What we see then is a competency with the highest monetary reward to employee ratio (though lowest average reward value) also having the highest sense of reward system effectiveness. Before suggesting a relationship between satisfaction and reward to employee ratio, we should examine the competency with the lowest level of satisfaction and the lowest sense of reward system effectiveness to see what its monetary reward system characteristics are.

Competency Five has the lowest level of satisfaction of organizational use of most rewards, and also has the lowest mean rating for the scaled variable "Reward system effectiveness" at 2.89 (and a statistically significant difference from Competency Two which had the highest mean rating). From Appendix A, Competency Five has the second lowest monetary award to employee ratio at 1.19. Competency Three, also with a low mean for the scaled variable "Reward system effectiveness," has the lowest ratio of all at 1.03. The average monetary award value for Competency Five was \$500, second only to Competency Three's average value of \$584. Competency Five had the lowest mean level of agreement (3.42) for statement 56, "My supervisor understands the importance of using monetary awards."

When an analysis of the Competency rating of reward system effectiveness is performed without FWS employees, the difference among competencies is no longer statistically significant at a 95 percent confidence level. This may be due to the small number employees remaining in Competencies One, Five and Eight after removing FWS employees from the analysis. However, support for the notion that a relationship exists between the reward to employee ratio and reward system effectiveness is not necessarily diminished.

Competency Three becomes the lowest ranked competency for reward system effectiveness when FWS employees are removed from the analysis. Competency Three has the lowest monetary reward to employee ratio at 1.03 monetary rewards per employee. Competency Three also has the highest average monetary reward value at 584 dollars per award.

To summarize this finding, Competency Two has: the highest satisfaction levels overall; the highest rating for the scaled variable "Reward system effectiveness"; the highest monetary awards to employee ratio; the lowest average monetary award value, and; the lowest average monetary reward value as a percentage of average basic pay. Competency Two has the highest level of disagreement with the idea that monetary rewards should become more substantial at the risk of fewer people receiving them. Competency Five, on the other hand, has: the lowest satisfaction levels overall; the lowest rating for the scaled variable "Reward system effectiveness"; the second lowest monetary award to employee ratio; the second highest average monetary reward value, and; the second highest average monetary award value as a percentage of average basic

pay. Competency Five employees also have less faith that their supervisors understand the importance of using monetary rewards.

The implied relationship between reward to employee ratio and a perceived level of reward system effectiveness suggests that an increased number of rewards facilitates development of expectancy and line-of-sight (I'll get this for doing that), and equity (more rewards per person may increase sense of fairness).

6. Location

Where statistically significant location differences exist, respondents from Patuxent River, MD consistently rated desirability of rewards, satisfaction with organizational handling of rewards, reward system effectiveness, as well as most assessment and normative statements about the reward system higher than respondents from Lakehurst, NJ did.

7. Seniority

There are few notable differences among seniority groups. The mean level of desirability for the scaled variable "Desirability of monetary rewards" is highest for the most junior group (0-4 years) at 5.23, and lowest for the most senior group (26+ years) at 4.67. Despite these differences in valence levels, the statistical analysis does not indicate that a linear trend exists.

An inverse relationship between seniority and desirability of educational and training opportunities is apparent. The most junior group has a mean value of 4.89. The mean value declines with an increase in seniority. Employees with 20-25 years experience place the lowest value on educational and training opportunities at 4.00. The

most senior group represents a departure from this trend with a mean value similar to the most junior group.

Though no significant differences exist among seniority groups for satisfaction with the NAWCAD's handling of various rewards, scores for the scaled variable "Reward system effectiveness" appear to decline progressing from the most junior group to the late-mid career group (15-19 years). The scores pick up again with the most senior groups (20+ years). There may be a relationship between age and seniority at these higher levels. In accordance with McCue and Gianakis (1997), and Ting (1997) older employees are more likely to have higher levels of job satisfaction. It may be possible in this case that a relatively high sense of reward system effectiveness is a manifestation of higher levels of job satisfaction. The survey, however, had no mechanism for measuring overall job satisfaction.

8. Non-supervisors, Team Leaders and Competency Managers

As stressed in the literature review, knowledge and understanding of the reward system is critical in order for incentives to have the maximum motivational effect. Both of the knowledge related statements (statement 41, "I am comfortable with my knowledge of how the reward system works," and statement 43, "I understand the new evaluation system") reveal significant differences with competency managers at the high end of the scale, team leaders in the middle and non-supervisors towards the lower end of the scale.

For statement 41, competency managers were well in the range of agreement at 4.87, while non-supervisors were in the range of disagreement at 3.42 with a statistically

significant difference in means between the two of 1.45. Team Leaders were in the middle at 3.95. Statement 43 had similar results with a larger statistically significant difference in means of 1.72 between competency managers and non-supervisors, with competency managers at 5.33, non-supervisors at 3.61, with team leaders between the two at 4.36.

These results are certainly logical. Non-supervisors are subject to the reward system. Team leaders evaluate non-supervisors and nominate them for awards. Competency managers, at the top of the reward system, evaluate and approve nominations after considering the justifications for rewards and the related fiduciary matters. There may also be a relation to experience. As people move up through the organization and are exposed to different responsibilities, their knowledge and understanding of evaluation and reward systems grows. Also, it is the upper echelons of management who may be responsible for the creation of these systems or at least for the *de facto* system in use. The size of the gap in knowledge and understanding of the systems is not in keeping with what is required for expectancy and line-of-sight. This may be especially true for statement 41 where non-supervisors rate their comfort with knowledge of the reward system below the midpoint.

There is a similar pattern of mean values for statement 56, "My supervisor understands the importance of using monetary rewards." Although all the means are above the midpoint, non-supervisors are significantly less in agreement with this statement than are team leaders and competency managers. It may be that as you move up in the organization, you work in closer proximity with your supervisor and have

greater opportunities for interaction and for discussion of rewards. Indeed, team leaders and competency managers are necessarily more intimately involved with the rewards system and as such, must communicate the importance of awards to each other. Budgetary constraints should facilitate, if not ensure, such communication.

Finally, non-supervisors rate statement 53, "I believe monetary awards should become more substantial even if that means fewer people would be able to receive them," just above the midpoint at 3.61. While team leaders and competency managers rate this statement at just over 4.00 (no statistically significant difference exists between team leaders and competency managers). This information should be considered in light of the apparent relationship between monetary reward to employee ratio and reward system effectiveness discussed above in the competency section. While employees may indicate that they would be willing to increase the size of monetary rewards at the risk of not receiving one at all, the findings from the competency examination suggest that the opposite may hold true. People may feel better about the reward system if the likelihood is increased that they will receive an award even if the value of the reward is relatively low compared to what they may have otherwise received.

H. SUMMARY

As illustrated in the literature review, the concepts of expectancy, equity, line-of-sight, and the rewarding of desired behaviors, were used as theoretical frameworks for developing guidelines for effective reward system management. This chapter discussed how the data, in terms of sample means and statistically significant differences among subgroups, relate to the guidelines and theoretical frameworks. Much of what has been

presented in this chapter suggest changes that can be made within the current reward system used by the NAWCAD to make the system a better tool for workforce motivation. The next chapter offers conclusions about the effectiveness of the current reward system and recommendations for increasing its effectiveness.

VI. CONCLUSIONS AND RECOMMENDATIONS

In Ross (1998), the NAWCAD's shift to a more performance based award system was noted. At the time, however, the changes were too recent for their effects to be analyzed. This thesis is an attempt at such an analysis. Indeed, one of the principle questions is "With regard to recent motivational theory, how effective is the NAWCAD's current reward system from the perspective of the employees affected by it?" In the following section, some of the secondary questions will be addressed first, enroute to answering this principle question.

A. REWARD SYSTEM EFFECTIVENESS

1. Does the NAWCAD's reward system offer what the employees want?

Although the focus groups, interviews, and reward survey did not identify desirable rewards aside from those incorporated in the current instruction, the levels of desirability for the available rewards indicate that the NAWCAD does indeed provide rewards of high valence to its employees. On the other hand, the levels of satisfaction with the NAWCAD's handling of these rewards suggest that although the rewards are of high valence, they are either too limited in size and/or too infrequently given.

On more than one instance in the focus groups and interviews, the "tax effect" on monetary rewards was mentioned; an award that would be dinner for four at a nice restaurant before taxes, becomes dinner for three after taxes. One of the most common complaints about monetary rewards was that they were just too small to be truly meaningful. A relatively narrow desirability/ satisfaction gap for On-The-Spot small

cash awards relative to the broader gap reported for other monetary rewards may indicate some level of success for the NAWCAD's shift to more frequent performance based awards.

2. Has the NAWCAD established the line-of-sight between performance and reward?

Even though employees do not appear to be convinced that high levels of performance will be rewarded, they responded that rewards are effectively linked to performance. This belief is a key component to line-of-sight. Additionally, focus group participants and interviewees suggested that despite some drawbacks, the new evaluation system supports greater flexibility for supervisors and more immediate rewarding of performance. Timeliness of rewards is an important element of line-of-sight.

The survey responses, however, were quite unfavorable with respect to the role the evaluation system plays in identifying who should receive awards. Also, the responses indicate a low level of satisfaction with the reward system since implementation of the new evaluation system. This is, perhaps, an indicator of the success of the NAWCAD's shift from reliance on end of year appraisals for rewards justification to more frequent rewards based on supervisors' observation of performance. There may be reason to believe, however, that the new evaluation system may fail to adequately capture an employee's history of performance. The long-term consequence may be that an employee will not be eligible for some reward in the future that requires a well-documented performance history.

3. Is the NAWCAD's reward system fair?

The survey results indicate that this is an area that needs improvement. A concern in the focus groups and interviews was that only the people who are working in high visibility areas or have high profile jobs tend to receive rewards. Additionally, the view was expressed that a secondary effect of doing a high profile job well is the increased likelihood of working on more high profile jobs. The implication is that people who perform critical work in the background or who are working autonomously are not being adequately recognized and rewarded.

4. Does the NAWCAD reward the desired behaviors?

A more detailed study of performance measures is required to adequately answer this question in depth. The survey results, however, suggest that the NAWCAD does not adequately reward one of its most highly regarded forms of organizational behavior, teamwork. Mohrman, Cohen and Mohrman (1995) are strong advocates of rewarding team performance over individual performance and claim that the difficulties in rewarding teams are not based on system complexity but on the background of management:

Many managers who use rhetoric extolling lateral organization and teamwork are products of a hierarchical, management-oriented system. Despite their rhetoric, they often continue to believe that good performance is primarily a function of superstars and reflects the skills of the manager. (Mohrman, Cohen & Mohrman, 1995, p. 311)

This view of management may be applicable to military organizations such as the NAWCAD. Continued reliance on rewarding individual performance may hinder strong team development and performance.

Readers may be wondering if there is a conflict between equity theory and an emphasis on rewarding teams over individuals. Equity theory suggests that if you reward members of a team equally, the high performers may sense inequity at being rewarded at the same rate as the low performers on the team. One focus group participant felt that spreading money evenly to team members was unfair to the real workers on the team. Lawler makes the argument that team dynamics can influence poor performers to improve. Also, he points out that the inequity in monetary rewards for high performers can be balanced with increased honorary recognition and other rewards bestowed *by the team* (Lawler, 1996, p. 211).

5. Do the NAWCAD employees understand the reward system?

The NAWCAD population mean of 3.60 for the statement “I’m comfortable with my knowledge of the reward system” supports the conclusion that employees understand the reward system to some extent. There is, however, room for improvement by closing the considerable knowledge gap between non-supervisors and competency managers. Increased understanding of the system should make it more effective as a motivator.

Understanding the reward system and developing line-of-sight are hampered by secrecy (Lawler, 1996). The anecdotal evidence from the focus groups suggests that this may be a problem at the NAWCAD. One focus group participant, who was new to the organization, said that there appeared to be no rhyme or reason to the way reward money

is distributed because it is not openly discussed. Being told to keep the amount of your reward a secret makes it difficult for others to establish a line-of-sight between performance and reward. The survey results, however, show that employees prefer some degree of confidentiality for the monetary rewards they receive. The anecdotal evidence from the literature suggests that publicizing the amount of reward a person receives motivates the other employees to meet the level of performance required to receive similar rewards (Hitt, Ireland & Hoskisson, 1999).

In total, the information presented above suggests that the NAWCAD's reward system is not fully meeting its potential as an effective tool for motivation of the workforce. The following points suggest why:

- The reward system is capable of giving rewards of high valence, although budget and policy constraints keep distribution of substantial monetary rewards low.
- Line-of-sight between performance and rewards has improved with a shift to the new reward and evaluation systems and the increased emphasis on using On-The-Spot awards. Unless people see a clear linkage between high performance and reward, line-of-sight is obscured. Secrecy in the reward system decision-making process might be working against further development of line-of-sight.
- The system is not as "fair" as it could be. Again, secrecy and the perception of favoritism for high visibility work act against the overall sense of equity among employees.
- In terms of shaping organizational behavior, the NAWCAD probably does not adequately reward team performance.
- NAWCAD employees seem to have at least a rudimentary knowledge of how the reward system works. The real knowledge though, rests with team leaders and competency managers. Secrecy also appears to be preventing non-supervisors from completely understanding the system.

B. DEMOGRAPHIC (SUB-GROUP) DIFFERENCES

1. Race and gender

The data on race and gender differences were counter to what was suggested by the literature. For race and gender variables, non-whites and females had statistically significant higher levels of satisfaction with the organization's use of most awards and the more agreement with assessment statements, than whites and males.

2. Age

The age of a NAWCAD employee does not appear to be a factor in determining the employee's perception of the NAWCAD's reward system.

3. Seniority

Length of time of employment appears to be an important factor in determining perception of the reward system. Junior employees (0 to 10 years) are likely to have the most positive feelings about reward system effectiveness. Late middle career employees (15-19 years) are likely to have the least positive feelings about the system.

Junior employees have a relatively high valence for educational and training opportunities compared to more senior employees. This is probably attributable to the desire of junior employees to advance in their present employment or at least to become more marketable in their field. Why the most senior employees have a valence for education almost as high as the most junior employees is less easy to explain. It may be that they are looking for a lifestyle change or are preparing for a second career after retiring from government service.

4. Paygrade

Perhaps the most significant finding with regard to paygrade, is the low appraisal of reward system effectiveness (a mean of 2.54) and low satisfaction levels registered by FWS employees. In all but one test of satisfaction with organizational use of rewards, FWS employees ranked at the bottom. In the only exception, On-the-Spot small cash awards, FWS employees ranked second to last with no statistically significant difference from the last group. There is not a convenient explanation for why this is the case. It may be that FWS employees have a different work culture that causes them to see the reward system differently from GS employees. There may also be bigger pay and compensation issues outside of the reward system that help to color an FWS employee's view of the system. A possible limitation to these findings is that this study did not stratify FWS paygrades compared to the way GS paygrades were stratified.

As discussed in the following sections, another important feature of the FWS employee group is the impact their presence has on the analysis of job-types and competencies due to the concentration of FWS employees in the trades/crafts group and Competency Five.

5. Job-type

People with administrative or clerical jobs consistently saw the reward system as more satisfactory than either the trades and crafts group or the engineering and science group. The trades and crafts group is the least satisfied with the reward system. This should be expected, however, since FWS employees are heavily represented in the trades and crafts group where they comprise 81 percent of that group.

The intrinsic satisfaction of the job-type (statement 58) may be the element that keeps trades and crafts employees (also FWS employees) motivated to work despite their low rating of reward system effectiveness (4.21 for intrinsic job satisfaction compared to 2.73 for reward system effectiveness). It may be that when intrinsic satisfaction is high, extrinsic satisfaction (from rewards) becomes less important. Some research, however, has concluded that intrinsic and extrinsic rewards are not directly substitutable (Lawler, 1981, p. 15).

6. Competencies

This sub-group component may be an important indicator of how an employee is likely to feel about the reward system. From Chapter V, Competency Two has the highest levels of satisfaction with organizational use of rewards. The relatively high reward to employee ratio (2.43 rewards per employee) in Competency Two may be the reason why. There are other considerations though.

Competency Two is the contracts competency. It is predominantly administrative and clerical as well as predominantly female. At the other end of the spectrum are Competency Five and Competency Three. Competency Five is the test and evaluation competency. This competency is predominantly trades/crafts and engineering/science based, predominantly male, and 70 percent FWS staffed. Competency Five generally scored lowest for satisfaction and appraisal of the reward system. Competency Five's reward to employee ratio is the second lowest at 1.19 rewards per employee. Competency Three is the logistics competency, with 60 percent of respondents claiming membership in the engineering/science group. Seventy-five percent of Competency Three

respondents are male. None of the respondents for Competency Three are FWS employees. Competency Three's monetary reward to employee ratio is the lowest at 1.03. Whether Competency Two's or Competency Three's appraisal of the reward system is most influenced by gender, job-type, or by the reward to employee ratio is uncertain. Competency Five's appraisal of the reward system however, certainly seems influenced by the presence of FWS employees.

7. Location

This investigation did not focus on the reasons for differences between employees at Patuxent River, MD and Lakehurst, NJ. A plausible explanation for Lakehurst's lower levels of satisfaction with the NAWCAD's handling of rewards and lower levels of agreement on the system statements may simply be the geographic separation between Lakehurst and the NAWCAD headquarters in Patuxent River. There may be a lack of "face time" between supervisors working at competency offices in Patuxent River and employees working autonomously at Lakehurst, or just a perceived lower level of visibility in general.

C. RECOMMENDATIONS

The second principle question is "In what ways can the current reward system be improved?" Of course, when answering this question, we must bear in mind the unique budgetary constraints of WCF activities. It is not helpful to say that the reward pot needs to be made bigger, even if that might produce the most benefit by satisfying the desires for high-valence, high-cost monetary rewards. To expand the rewards budget is to increase the overhead of the organization. For such an increase to be effected, the

management of the NAWCAD should be certain that increases in effectiveness and efficiency will result in a net positive impact on the Net Operating Result (NOR). Rather, there are still low or no cost ways to improve the reward system.

Approve the draft reward instruction. The draft NAVAIR instruction used by NAWCAD contains the important elements of a reward instruction. The policy statement does not use the words expectancy, equity, or line-of-sight, but the concepts those words represent are captured in phrases such as: "It is the policy of the TEAM to fairly and appropriately recognize and reward employees' worthy contributions in as timely a manner as possible." (Naval Air Systems Command)

Communicate with the workforce. After the instruction is approved, efforts should be made to close the reward system knowledge gap between supervisors and the workforce. Training should be given to all employees so that they understand what rewards are available, and the conditions under which they will be given. Part of this training might also include reinforcement of the notion that the NAWCAD is committed to recognizing and rewarding superior performance. New employees should receive this training as part of their indoctrination. When employees become team leaders or competency managers, they should receive training on their new roles in the reward system. The net effect of the training is likely to be a workforce more knowledgeable of the reward system and possessing a more appropriate level of expectancy.

Utilize all reward resources. The valence for time-off awards is significant. The utilization rate for these rewards in FY99 was only 79 percent.

Examine best practices. Competency Two's handling of monetary rewards may provide a key to increasing the effectiveness of the reward system organization-wide. If the effects of job-type and gender are secondary to the effect of the reward to employee ratio, then it is possible that the most effective use of monetary rewards is to increase the number of rewards at the expense of reward size. Additionally, Competency Two may have other reward practices that contributed to its relatively high level of satisfaction that went undiscovered in this study.

Do not stop giving personalized items. Despite the low valence level accorded to personalized items, the NAWCAD employees seem to display these items with pride. Neckstraps, coffee mugs, and other such items give the employee a sense of identity on the job. The low valence level of these items may be a reflection of their relative standing to other rewards and not an indication of undesirability. Giving these items out as commemoratives or as incidentals to other rewards may be their best use.

Consider using a cafeteria style approach to rewards. The mean for statement 52, "When being rewarded, I should be able to choose between awards of equal value," was 4.00. This suggests that people might like the option of choosing a time-off award of equal (or perhaps lesser) value to a monetary award. This might present some small opportunities for cost effectiveness if an employee has a high valence for a low cost reward compared to a low valence for a high cost award.

D. LIMITATIONS

This study and any conclusions drawn from it have the following limitations:

- Measures of performance are a necessary element of any reward system. This study did not attempt to identify or evaluate the wide variety of performance measures in use at the NAWCAD. Some of the sub-group differences described in this work may be attributable to differences in these performance measures.
- The dollar costs of specific non-monetary rewards were not explored. These items do come at a price to the organization despite their “non-monetary” description.
- Similarly, the administrative costs for the reward system were not examined.
- As mentioned previously, the FWS employee group was not stratified by paygrade as the GS employees were.
- Job-type groups were used to simplify data analysis. Doing so, however, means that reactions of specific occupations to the reward system might not have been accurately represented.

E. RECOMMENDATIONS FOR FURTHER RESEARCH

There are several opportunities for more specific research of the NAWCAD reward and evaluation policy. They include:

- Conduct an in-depth study of Competency Two’s reward system management to discover the elements of success and determine how those could be used in other competencies.
- Examine the fundamental differences between FWS and GS employees in relation to the NAWCAD reward system in order to find ways to make the reward system more effective for FWS employees.
- Examine and evaluate the new “acceptable/unacceptable” evaluation system, with respect to current motivation theory, to determine if the new system plays an appropriate role in establishing reward system effectiveness. The current emphasis on the use of On-The-Spot awards could serve as the focal point for the study.
- Choose a core function workcenter from each competency and conduct a comparative study of the entire reward system from performance measures to award presentation to determine how fundamental differences between ways of doing business influence reward system effectiveness.

- Conduct a comparative study of another WCF activity (perhaps another warfare center) using methods similar to the ones used in this thesis in order to determine the best practices among warfare centers.
- Expand the study of motivation at the NAWCAD beyond the rewards system. Incorporate the intrinsic elements of various jobs as well as compensatory items such as pay and retirement benefits to gain a more developed picture of the motivation and satisfaction of NAWCAD employees.
- Examine the dollar cost of all rewards in use at the NAWCAD and determine the most efficient use of reward money with sensitivity towards the valence of those rewards.
- Explore in greater detail the relationship between the NAWCAD's reward system and team-based organization to determine if an optimal trade-off point can be established between team and individual rewards in terms of individual equity versus team performance.

F. CONCLUDING COMMENTS

Managers and supervisors in any business may find it challenging to work with a reward system while juggling the motivational theories behind the system. This may be an even greater challenge for managers who must work with a relatively small reward budget in the most effective way possible. Extra money would help, but is not likely given the WCF budgetary constraints. The recommendations outlined above, however, are within the realm of possibility. Considering the issues of expectancy, equity, line-of-sight, and rewarding desired behavior in the administration of the reward system would undoubtedly increase the effectiveness of the process.

Finally, the reward system for any organization is only one element in the motivation of the workforce. A person's career path, work environment, and background all play a part in determining motivation levels. It should be encouraging to the

NAWCAD's management to see that so many employees believe that their jobs are rewarding in and of themselves, and that to some degree the employees see their jobs as having the potential to provide opportunities for growth and self-fulfillment.

APPENDIX A. NAWCAD FY 99 AWARD ALLOTMENTS

NAWCAD FY99 AWARD ALLOTMENTS THRU 30 SEPT 1999

COMB	# of Employees	AS OF COB 9/30/98	Total Basic Pay	Total Allotment* Based on 1.1% of Basic Pay	Money Spent	% Used	No. of Awards	QSI Allotment Based on 3% of # Employees	QSI Used	% Used	Time Off Allotment (Hours)	Time Off Used	% Used	No. of Awards
1 Total	100		\$6,563,473	\$78,761,668	\$83,647	106.2%	223	3	4	133.3%	100	52	52.0%	9
2 Total	160		\$7,185,566	\$86,226,79	\$88,048	102.1%	388	5	5	104.2%	159	147	92.5%	17
3 Total	241		\$12,483,858	\$149,806,30	\$145,429	97.1%	249	7	7	96.8%	240	218	90.8%	17
4 Total	3068		\$167,188,020	\$2,006,256,23	\$1,919,315	95.7%	4646	92	81	88.0%	3040	1803	59.3%	161
5 Total	714		\$36,030,497	\$432,365,97	\$427,081	98.8%	854	21	8	37.3%	713	799	112.1%	79
7 Total	826		\$34,847,610	\$418,171,33	\$480,933	115.0%	1245	25	21	84.7%	820	785	95.7%	94
8 Total	972		\$35,095,576	\$421,144,51	\$399,150	94.8%	1282	29	24	82.3%	975	992	101.7%	165
Grand Total	4081		\$299,345,400	\$3,597,732,88	\$3,543,403	98.4%	8887	182	159	87.3%	6047	4796	79.3%	542

TOTAL ALLOTMENT: AMOUNT REVISED FROM 1% TO 1.2%, TOTAL INCREASE OF \$598,788.80
Excludes Performance Awards & QSI for Performance Year 1998, paid out/awarded 10/4 & 10/11/98.

NOTE: Across competency awards are reflected in the Money Spent/No. of Awards columns, but adjustment to the allocation has not been made on this report.

Table A.1. NAWCAD FY99 Award Allotments. (Naval Air Warfare Center Aircraft Division, 1999).

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APPENDIX B. NAWCAD REWARD SURVEY

NAWCAD REWARD SURVEY

USE NO. 1 PENCIL ONLY

• USE A # 2 PENCIL AND FILL THE RESPONSES COMPLETELY.

1. Pay Grade:

WG ☐
GS 1-6 ☐ GS 7-8 ☐
GS 9-10 ☐ GS 11 ☐
GS 12 ☐ GS 13 ☐
GS 14 ☐ GS 15 ☐

2. Choose best description:

Competency Manager ☐
Team Leader ☐
Both ☐
Neither ☐

3. Competency:

1.0 ☐ 5.0 ☐
2.0 ☐ 7.0 ☐
3.0 ☐ 8.0 ☐
4.0 ☐

4. Location:

Lakehurst ☐
Patuxent River ☐

5. Age:

(1) (1) (1) (1)
(2) (2) (2) (2)
(3) (3) (3) (3)
(4) (4) (4) (4)
(5) (5) (5) (5)
(6) (6) (6) (6)
(7) (7) (7) (7)
(8) (8) (8) (8)

6. Which Org.:

(1) (1) (1) (1)
(2) (2) (2) (2)
(3) (3) (3) (3)
(4) (4) (4) (4)
(5) (5) (5) (5)
(6) (6) (6) (6)
(7) (7) (7) (7)
(8) (8) (8) (8)

7. Marital Status:

Married ☐ Single ☐
Divorced ☐

8. Children (check all that apply):

Young, at home ☐ Teen's, at home ☐
No children at home ☐

9. Gender:

Female ☐ Male ☐

10. Ethnicity:

White (not of Hispanic origin) ☐ Black (not of Hispanic origin) ☐ American Indian ☐
Hispanic ☐ Asian or Pacific Islander ☐ Other ☐

11. In the past 3 years I have received (check all that apply):

On-The-Spot Award ☐ Time-Off Award ☐ Honorary Recognition ☐ Any Monetary Award ☐ Any Non-Monetary Award ☐

12. How long does your work one week:

15 min or less ☐
16-30 min ☐
31-60 min ☐
1 hr + ☐

12. Choose one of the following which best describes your job:

Administrative ☐ Trades/Crafts ☐ Engineering/Science ☐ Clerical ☐

The following list represents a variety of rewards. Please rate each one by degree of desirability to you personally. In the box on the far right rank the top three rewards you most desire by darkening only one circle in each column.

Highly Undesirable $\longleftrightarrow$ Highly Desirable

Choices

	1st	2nd	3rd
14. Time-Off awards	☐	☐	☐
15. Special Act awards (for non-recurring contribution)	☐	☐	☐
16. Sustained Excellence awards (monetary award for demonstrated, sustained, excellent performance)	☐	☐	☐
17. Honorary Recognition	☐	☐	☐
18. On-The-Spot small cash awards	☐	☐	☐
19. End of year large cash awards	☐	☐	☐
20. Large public recognition (competency wide or larger)	☐	☐	☐
21. Small public recognition (office or team)	☐	☐	☐
22. Private recognition (few peers and immediate supervisor)	☐	☐	☐
23. Educational/Training opportunities	☐	☐	☐
24. Employee of the Month, Quarter, Year, etc.	☐	☐	☐
25. Personalized items (neck straps, photos, paperweights, etc.)	☐	☐	☐
26. Quality Step Increases	☐	☐	☐

How satisfied are you with the way the organization uses each of the following rewards:

Highly Unsatisfied $\longleftrightarrow$ Highly Satisfied

	1st	2nd	3rd
27. Time-Off awards	☐	☐	☐
28. Special Act awards (for non-recurring contribution)	☐	☐	☐
29. Sustained Excellence awards (monetary award for demonstrated, sustained, excellent performance)	☐	☐	☐
30. Honorary Recognition	☐	☐	☐
31. On-The-Spot small cash awards	☐	☐	☐
32. End of year large cash awards	☐	☐	☐
33. Large public recognition (competency wide or larger)	☐	☐	☐
34. Small public recognition (office or team)	☐	☐	☐
35. Private recognition (few peers and immediate supervisor)	☐	☐	☐
36. Educational/Training opportunities	☐	☐	☐
37. Employee of the Month, Quarter, Year, etc.	☐	☐	☐
38. Personalized items (neck straps, photos, paperweights, etc.)	☐	☐	☐
39. Quality Step Increases	☐	☐	☐

Figure B.1. NAWCAD Reward Survey (Front).

[illegible]

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APPENDIX C. NAWCAD SURVEY RESPONSE DATA

The following tables (C.1-C.5) contain the combined NAWCAD population survey response data. The tables are arranged in order of occurrence on the survey. For each survey item (except demographics and top three reward rankings), frequency and percentage of response by choice is given. Percentages are rounded to nearest whole number.

		Highly Undesirable ← → Highly Desirable					
		1	2	3	4	5	6
14. Time-Off awards		Mean (S.D.) → 4.00 (1.65)					
	Frequency	31	46	46	60	71	83
	Percentage	3	14	19	19	21	24
15. Special Act awards (for non-recurring contribution)		Mean (S.D.) → 4.54 (1.32)					
	Frequency	11	16	41	78	94	97
	Percentage	3	5	12	23	28	29
16. Sustained Excellence awards (monetary award for demonstrated, sustained, excellent performance)		Mean (S.D.) → 5.26 (1.15)					
	Frequency	8	5	15	34	78	199
	Percentage	2	2	4	10	23	59
17. Honorary Recognition		Mean (S.D.) → 3.92 (1.33)					
	Frequency	19	28	63	106	71	39
	Percentage	9	5	19	33	22	12
18. On-The-Spot small cash awards		Mean (S.D.) → 4.65 (1.39)					
	Frequency	17	11	35	60	97	115
	Percentage	9	3	10	19	29	34
19. End of year large cash awards		Mean (S.D.) → 5.23 (1.22)					
	Frequency	10	9	10	39	67	204
	Percentage	9	3	9	12	20	60
20. Large public recognition (competency wide or larger)		Mean (S.D.) → 3.33 (1.53)					
	Frequency	49	62	60	79	51	29
	Percentage	15	16	19	24	16	9
21. Small public recognition (office or team)		Mean (S.D.) → 3.65 (1.45)					
	Frequency	31	50	61	63	68	34
	Percentage	9	16	19	28	20	10
22. Private recognition (few peers and immediate supervisor)		Mean (S.D.) → 3.73 (1.47)					
	Frequency	30	46	63	65	71	41
	Percentage	9	14	19	25	21	12
23. Educational/Training opportunities		Mean (S.D.) → 4.46 (1.51)					
	Frequency	20	28	31	63	50	107
	Percentage	9	3	9	19	27	32
24. Employee of the Month, Quarter, Year, etc.		Mean (S.D.) → 2.99 (1.60)					
	Frequency	79	69	56	65	38	29
	Percentage	24	21	17	19	11	9
25. Personalized Items (neck straps, photos, paperweights, etc.)		Mean (S.D.) → 2.65 (1.44)					
	Frequency	101	97	74	56	39	11
	Percentage	30	20	22	17	9	3
26. Quality Step Increases		Mean (S.D.) → 5.38 (1.23)					
	Frequency	15	4	7	24	54	240
	Percentage	4	1	2	7	16	70

Table C.1. Desirability of Rewards (Items 14-26).

How satisfied are you with the way the organization uses each of the following awards:

		Highly Unsatisfied ← → Highly Satisfied					
		1	2	3	4	5	6
27. Time-Off awards	Mean (S.D.)	2.96 (1.48)					
	Frequency	76	65	86	68	38	20
	Percentage	22	18	24	19	11	6
28. Special Act awards (for non-recurring contribution)	Mean (S.D.)	3.24 (1.43)					
	Frequency	53	51	96	76	52	20
	Percentage	15	15	28	22	15	6
29. Sustained Excellence awards (monetary award for demonstrated, sustained, excellent performance)	Mean (S.D.)	2.99 (1.47)					
	Frequency	76	56	85	71	41	17
	Percentage	22	16	25	21	12	5
30. Honorary Recognition	Mean (S.D.)	3.01 (1.29)					
	Frequency	53	62	102	81	32	9
	Percentage	16	18	30	24	9	3
31. On-The-Spot small cash awards	Mean (S.D.)	3.55 (1.58)					
	Frequency	54	38	73	75	71	41
	Percentage	15	11	21	21	20	12
32. End of year large cash awards	Mean (S.D.)	2.89 (1.55)					
	Frequency	89	64	70	60	42	20
	Percentage	26	19	20	17	12	6
33. Large public recognition (competency wide or larger)	Mean (S.D.)	2.93 (1.37)					
	Frequency	76	52	84	95	27	10
	Percentage	22	15	24	28	8	3
34. Small public recognition (office or team)	Mean (S.D.)	3.12 (1.41)					
	Frequency	65	46	89	97	35	17
	Percentage	19	13	26	28	10	5
35. Private recognition (few peers and immediate supervisor)	Mean (S.D.)	3.25 (1.48)					
	Frequency	61	43	84	90	44	25
	Percentage	18	12	24	26	13	7
36. Educational/Training opportunities	Mean (S.D.)	3.41 (1.61)					
	Frequency	66	42	56	85	64	35
	Percentage	19	12	16	24	18	10
37. Employee of the Month, Quarter, Year, etc.	Mean (S.D.)	2.72 (1.43)					
	Frequency	96	64	70	81	22	12
	Percentage	28	18	20	24	6	4
38. Personalized items (neck straps, photos, paperweights, etc.)	Mean (S.D.)	2.84 (1.44)					
	Frequency	89	55	73	89	25	13
	Percentage	26	16	21	26	7	4
39. Quality Step Increases	Mean (S.D.)	2.47 (1.57)					
	Frequency	140	64	58	42	23	23
	Percentage	40	18	17	12	7	7

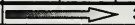
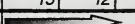
Table C.2. Satisfaction with organizational use of rewards. (Items 27-39).

Please indicate the degree to which you agree or disagree with each of the following statements.

		1	2	3	4	5	6
		Strongly Disagree	Disagree	Mildly Disagree	Mildly Agree	Agree	Strongly Agree
40. I am satisfied with the reward system.	Mean (S.D.)	3.01 (1.48)					
	Frequency	74	73	64	76	58	11
	Percentage	21	21	18	21	16	3
41. I am comfortable with my knowledge of how the reward system works.	Mean (S.D.)	3.60 (1.40)					
	Frequency	27	68	66	76	102	19
	Percentage	8	19	18	21	29	5
42. I think the reward system is fair and equitable.	Mean (S.D.)	2.90 (1.46)					
	Frequency	74	86	62	68	49	11
	Percentage	21	25	18	19	14	3
43. I understand the new evaluation system.	Mean (S.D.)	3.85 (1.51)					
	Frequency	30	54	44	70	113	39
	Percentage	9	15	13	20	32	11
44. The command has adequately emphasized the importance of rewarding its employees.	Mean (S.D.)	3.17 (1.43)					
	Frequency	51	82	63	87	54	16
	Percentage	14	23	18	25	15	5
45. I believe that if I achieve a high level of performance the organization will reward me.	Mean (S.D.)	3.41 (1.57)					
	Frequency	59	60	37	101	66	30
	Percentage	17	17	11	29	19	9
46. I feel that I should be rewarded for doing my job well.	Mean (S.D.)	4.57 (1.36)					
	Frequency	12	27	27	68	118	99
	Percentage	3	8	8	19	34	28
47. I believe awards are effectively linked to performance.	Mean (S.D.)	3.67 (1.62)					
	Frequency	47	52	53	74	78	51
	Percentage	13	15	15	21	22	14
48. I believe the evaluation system effectively identifies who should receive awards.	Mean (S.D.)	2.73 (1.37)					
	Frequency	78	101	62	70	35	7
	Percentage	22	29	18	20	10	2
49. I am more satisfied with the awards system since implementation of the new evaluation system.	Mean (S.D.)	2.78 (1.34)					
	Frequency	81	66	97	64	34	6
	Percentage	23	19	28	18	10	2
50. I receive adequate feedback on my job performance.	Mean (S.D.)	3.70 (1.56)					
	Frequency	42	54	45	70	106	34
	Percentage	12	15	13	20	30	10
51. I believe that award money should be equally distributed to all workers regardless of performance.	Mean (S.D.)	1.97 (1.39)					
	Frequency	181	94	28	14	17	16
	Percentage	52	27	8	4	5	5
52. When being rewarded, I should be able to choose between awards of equal value.	Mean (S.D.)	4.00 (1.44)					
	Frequency	18	51	43	102	80	60
	Percentage	5	14	12	29	23	17

Table C.3. General reward system statements (Items 40-52).

Please indicate the degree to which you agree or disagree with each of the following statements.

		1	2	3	4	5	6
		Strongly Disagree	Disagree	Mildly Disagree	Mildly Agree	Agree	Strongly Agree
53. I believe monetary awards should become more substantial even if... fewer people would...receive them.	Mean (S.D.)	 3.73 (1.40)					
	Frequency	25	49	81	80	88	34
	Percentage	7	14	23	22	25	10
54. I feel free to discuss award money I've received with my peers.	Mean (S.D.)	 3.13 (1.51)					
	Frequency	63	76	66	68	65	17
	Percentage	18	21	19	19	18	5
55. Award money should be kept confidential.	Mean (S.D.)	 4.07 (1.56)					
	Frequency	30	41	45	66	104	69
	Percentage	9	12	13	19	29	19
56. My supervisor understands the importance of using monetary awards.	Mean (S.D.)	 3.98 (1.52)					
	Frequency	36	34	40	83	108	50
	Percentage	10	10	11	24	31	14
57. Praise from my immediate supervisor for work well done is important to me.	Mean (S.D.)	 5.05 (1.12)					
	Frequency	10	7	11	41	146	141
	Percentage	3	2	3	12	41	40
58. My job is rewarding in and of itself.	Mean (S.D.)	 4.15 (1.36)					
	Frequency	19	32	43	90	117	49
	Percentage	5	9	12	26	33	14
59. My job provides opportunities for growth and self-fulfillment.	Mean (S.D.)	 3.61 (1.61)					
	Frequency	55	42	60	69	90	40
	Percentage	15	12	17	19	25	11
60. I feel that team performance is adequately rewarded.	Mean (S.D.)	 3.25 (1.42)					
	Frequency	46	72	75	86	54	19
	Percentage	13	21	21	24	15	5
61. The mix of team and individual awards is properly balanced.	Mean (S.D.)	 2.93 (1.31)					
	Frequency	56	87	90	70	40	8
	Percentage	16	25	26	20	11	2
62. Team performance is more highly rewarded than individual performance.	Mean (S.D.)	 3.03 (1.37)					
	Frequency	49	85	97	60	43	16
	Percentage	14	24	28	17	12	5

Team Leaders and Competency Managers only.

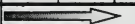
63. Differences in rules...across competencies make it difficult to reward members of the same team.	Mean (S.D.)	 4.61 (1.18)					
	Frequency	2	3	6	23	29	20
	Percentage	2	4	7	28	35	24
64. The new evaluation system has made it easier for me to reward employees.	Mean (S.D.)	 3.20 (1.42)					
	Frequency	11	18	16	19	14	3
	Percentage	14	22	20	24	17	4

Table C.4. General reward system statements (Items 53-64).

Please indicate the degree to which you agree or disagree with each of the following statements.

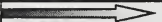
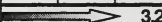
		Strongly Disagree	Disagree	Mildly Disagree	Mildly Agree	Agree	Strongly Agree
		1	2	3	4	5	6
65. I am satisfied with the time between nomination and approval of awards.	Mean (S.D.)						3.88 (1.28)
	Frequency	2	13	14	24	22	7
	Percentage	2	16	17	29	27	9
66. Approval authority for On The Spot awards should be delegated to a lower management level.	Mean (S.D.)						4.27 (1.40)
	Frequency	2	11	9	16	27	16
	Percentage	3	14	11	20	33	20
67. I am occasionally required to give awards when performance does not justify being rewarded.	Mean (S.D.)						3.27 (1.39)
	Frequency	5	25	15	18	10	6
	Percentage	6	32	19	23	13	8

Table C.5. General reward system statements (Items 65-67).

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APPENDIX D. SUBGROUP DIFFERENCES FOR SPECIFIC MONETARY AND NON-MONETARY AWARDS

A. INTRODUCTION

This appendix contains illustrations of statistically significant differences among select demographic subgroups for specific monetary and recognition rewards. This analysis generally follows the outline of the survey questionnaire (Appendix B). The means and frequencies for all responses can be found in Appendix C.

B. DESIRABILITY OF MONETARY REWARDS

1. Special Act Awards

The combined NAWCAD population mean for desirability of Special Act Awards is 4.54. Only one of the demographic factors showed significant differences in the value of Special Act Awards. Females have a statistically significant higher mean value for Special Act Awards (difference = .33) than males [$t(316)=2.14, (p<.000)$]. Refer to Fig. D.1.

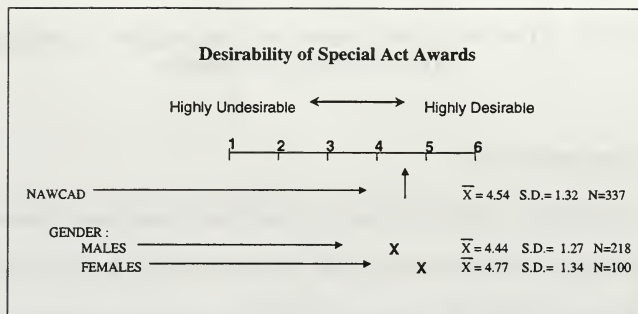


Figure D.1. Desirability of Special Act Awards (Gender).

2. On-The-Spot Small Cash Awards

The combined NAWCAD population mean for desirability of On-The-Spot Small Cash Awards is 4.65. For competencies, the ANOVA results are: $[F(6,323)=2.282$ ($p<.036$)]. Competency Three has the lowest mean on this variable, with a statistically significant lower mean value ($p<.018$) than the means for Competencies Two and Eight. Competency Three does not have a statistically significant difference from Competencies One, Four, Five, and Seven. Competencies Two and Eight have similar high ratings on this item with statistically significant higher mean values than Competencies Three, Five, and Seven ($p<.025$ for Competency Two, $P<.042$ for Competency Eight). Competencies Two and Eight do not have a statistically significant difference from Competencies One, Four, and Eight. Refer to Fig. D.2.

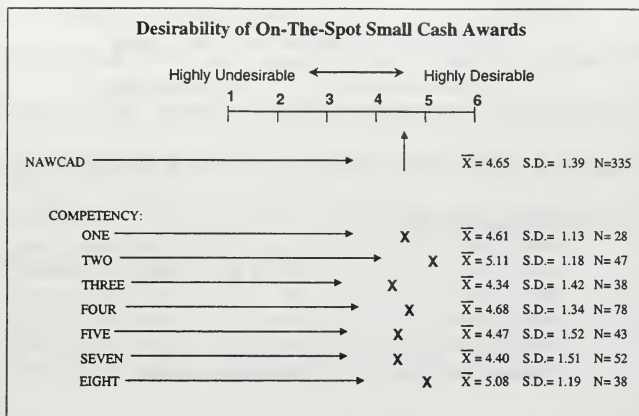


Figure D.2. Desirability of On-The-Spot Small Cash Awards (Competencies).

For seniority groups, the ANOVA results are: $[F(5,325)=2.493$ ($p<.031$)]. The highest seniority group (6) has the lowest mean, with a statistically significant lower value ($p<.003$) than the mean for the lowest seniority group (1). Group 6 does not have a statistically significant difference from the remaining groups. The newest employees (Group 1) have the highest rating on this item, and have a statistically significant higher mean value than groups 2, 3, 5, and 6 ($p<.042$), but does not have a statistically significant difference from group 4. Refer to Fig. D.3.

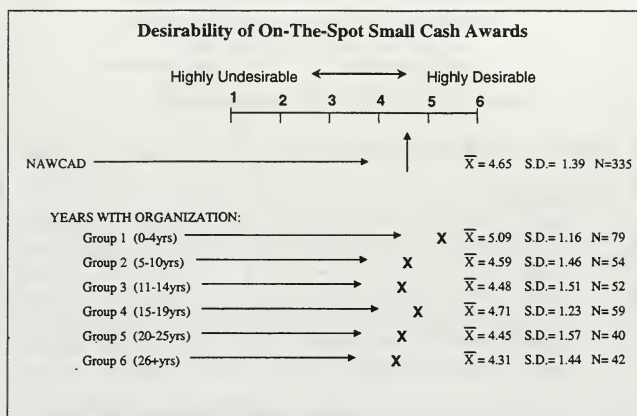


Figure D.3. Desirability of On-The-Spot Small Cash Awards (Seniority).

Females have a higher valuation of On-The-Spot Small Cash Awards (difference = .33) than males [$t(315)=2.02$, ($p<.044$)]. Refer to Figure D.4.

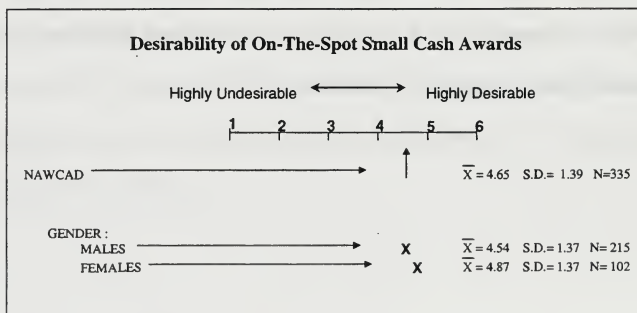


Figure D.4. Desirability of On-the-Spot Small Cash Awards (Gender).

3. End of Year Large Cash Award

The combined NAWCAD population mean for desirability of End of Year Large Cash Awards is 5.23. Only one of the demographic factors showed significant differences in the value of End of Year Large Cash Awards. Whites have a higher valuation (difference = .39) of End of Year Large Cash Awards than non-whites [$t(332)=2.09$, ($p<.037$)]. Refer to Fig. D.5.

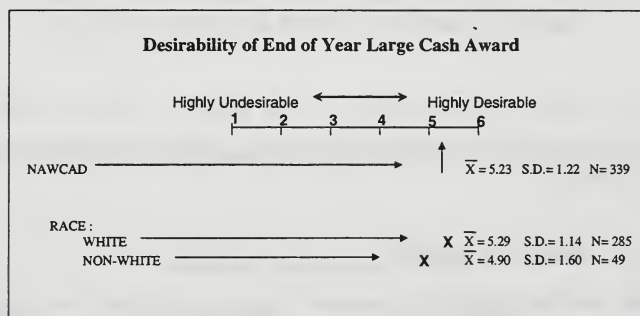


Figure D.5. Desirability of End of Year Large Cash Award (Race).

4. Quality Step Increases

For job-types, the ANOVA results are: [$F(2,334)=5.712$ ($p<.004$)]. The Trades/Crafts group (2) has the lowest mean, with a statistically significant lower value ($p<.004$) than the means for both groups 1 (Administrative/Clerical) and 3 (Engineering/Sciences). The latter two groups do not have a statistically significant difference from each other. Refer to Fig. D.6.

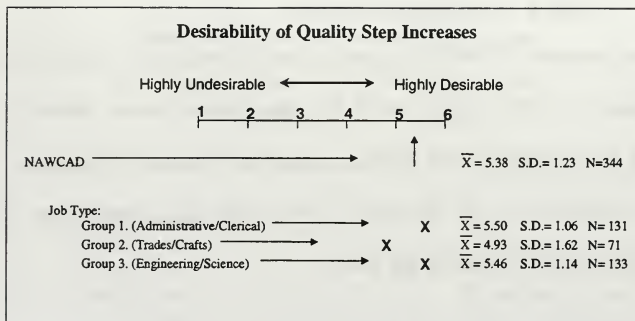


Figure D.6. Desirability of Quality Step Increases (Job-type).

C. SATISFACTION WITH ORGANIZATIONAL USE OF MONETARY REWARDS

1. Special Act Awards

The combined NAWCAD population mean for satisfaction with organizational use of Special Act Awards is 3.24. Females have a higher level of satisfaction with Special Act Awards (difference = .53) than males [$t(326)=3.17$, ($p<.002$)]. Refer to Fig. D.7.

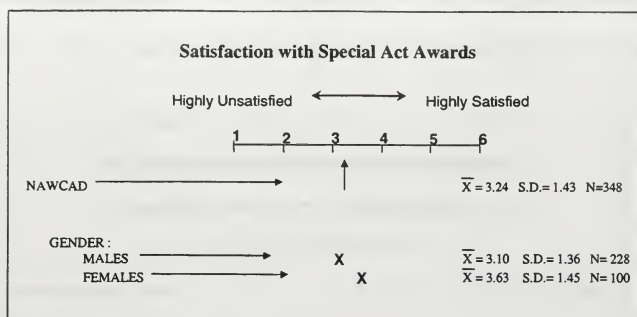


Figure D.7. Satisfaction with Special Act Awards (Gender).

Non-whites have a higher level of satisfaction with Special Act Awards (difference = .52) than whites [$t(340)=2.42, (p<.016)$]. Refer to Fig. D.8.

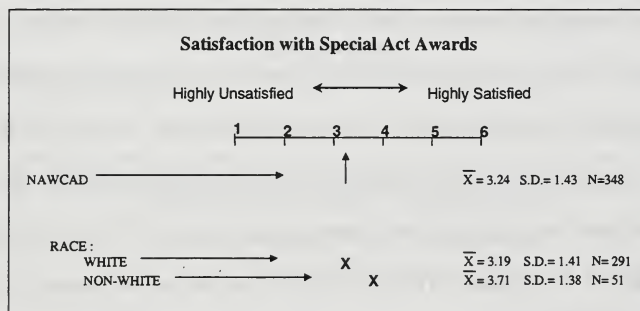


Figure D.8. Satisfaction with Special Act Awards (Race).

2. On-The-Spot Small Cash Awards

The combined NAWCAD population mean for satisfaction with organizational use of On-The-Spot Small Cash Awards is 3.55. Patuxent River, MD has a higher level

of satisfaction with the use of On-The-Spot Small Cash Awards (difference = .44) than Lakehurst, NJ [$t(346)=2.42$, ($p<.016$)]. Refer to Fig. D.9.

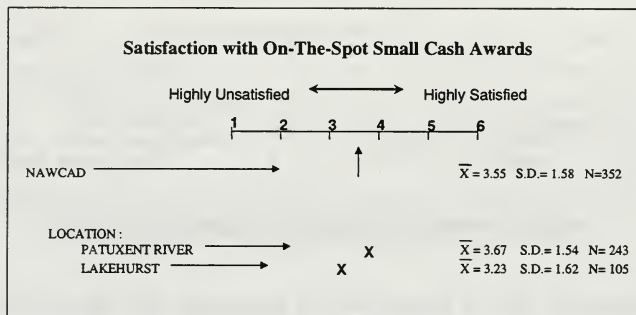


Figure D.9. Satisfaction with On-The-Spot Small Cash Awards (Location).

For competencies, the ANOVA results are: [$F(6,339)= 2.263$ ($p<.037$)]. Competency Two has the highest rating on this item, with a statistically significant higher mean value than Competencies Three, Five, and Eight ($p<.014$). Refer to Fig. D.10.

For paygrades, the ANOVA results are: [$F(4,349)=3.576$ ($p<.007$)]. The mean for the GS 1-8 group has a statistically significant lower value ($p<.012$) than the means for GS 9-11 and GS 13-15 groups. The GS 1-8 group does not have a statistically significant difference from the FWS and GS 12 groups. The GS 9-11 group has the highest rating on this item, with a statistically significant higher mean value than the FWS and GS 1-8 groups ($p<.012$). The GS 9-11 group does not have a statistically significant difference from the GS 12 and GS 13-15 groups. Refer to Fig. D.11.

Females have a higher level of satisfaction with On-The-Spot Small Cash Awards (difference = .38) than males [$t(329)=2.05$, ($p<.041$)]. Refer to Fig. D.12.

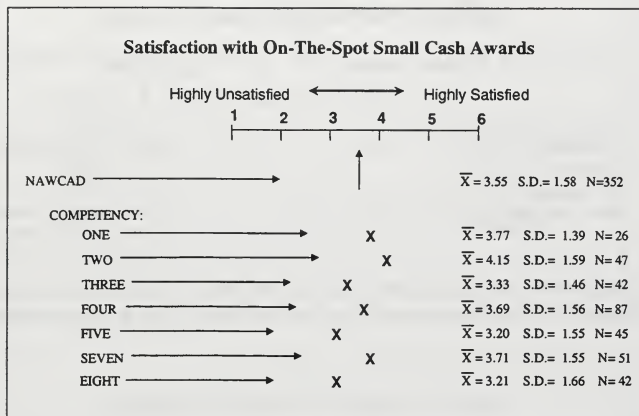


Figure D.10. Satisfaction with On-The-Spot Small Cash Awards (Competencies).

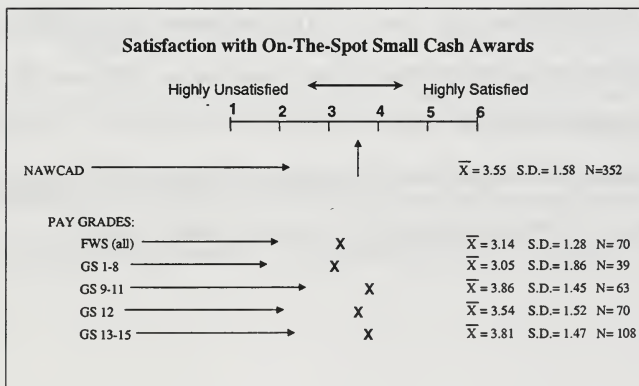


Figure D.11. Satisfaction with On-The-Spot Small Cash Awards (Paygrades).

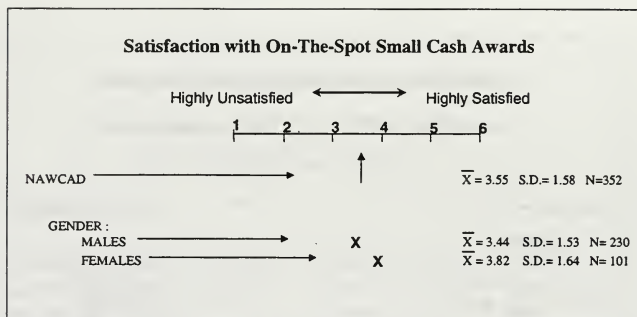


Figure D.12. Satisfaction with On-The-Spot Small Cash Awards (Gender).

3. End-of-Year Large Cash Awards

The combined NAWCAD population mean for satisfaction with organizational use of End-of-Year Large Cash Awards was 2.89. For paygrades, the ANOVA results are: $[F(4,342)=3.237 \text{ (} p<.013\text{)}]$. The GS 9-11 group has the highest rating on this item, with a statistically significant higher mean value than the FWS and GS 12 groups ($p<.004$). Refer to Fig. D.13.

Females have a higher level of satisfaction with End of Year Large Cash Awards (difference = .44) than males [$t(323)=2.37, \text{ (} p<.019\text{)}]$. Refer to Fig. D.14.

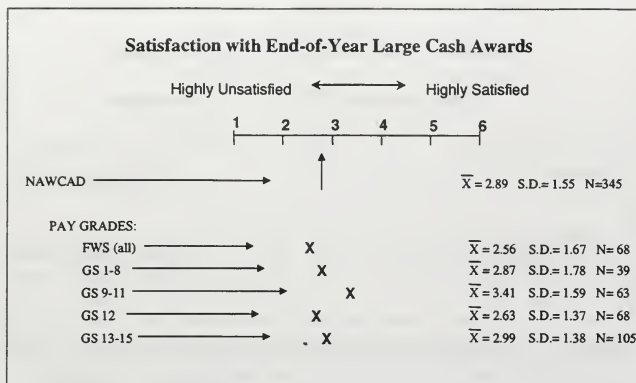


Figure D.13. Satisfaction with End-of-Year Large Cash Awards (Paygrades).

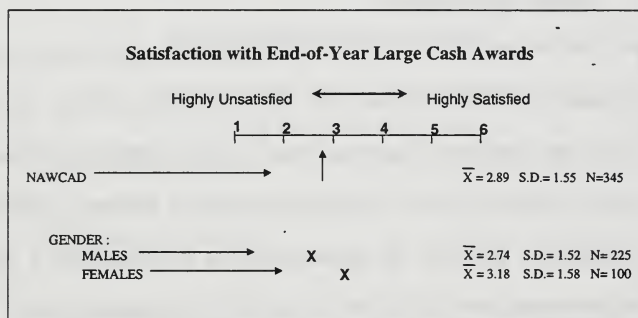


Figure D.14. Satisfaction with End-of-Year Large Cash Awards (Gender).

Non-Whites have a higher level of satisfaction with organizational use of End-of-Year Large Cash Awards (difference = .72) than whites [$t(337)=3.07$, ($p<.002$)]. Refer to Fig. D.15.

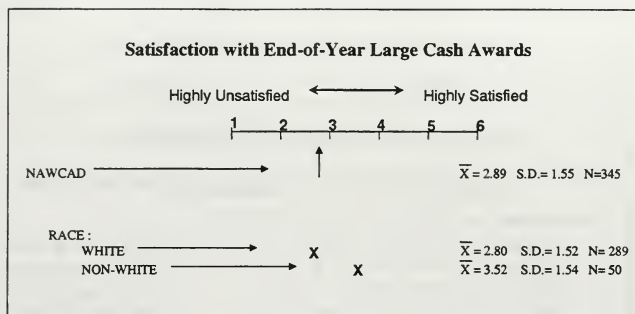


Figure D.15. Satisfaction with End-of-Year Large Cash Awards (Race).

4. Quality Step Increases

The NAWCAD population mean for satisfaction with Quality Step Increases is 2.47. For paygrades, the ANOVA results are: $[F(4,347)=4.803 \text{ (} p<.001\text{)}]$. The mean for the GS 12 group has a statistically significant lower value ($p<.006$) than the mean for the GS 9-11 group, but does not have a statistically significant difference from the other groups. The GS 9-11 group has the highest rating on this item, with a statistically significant higher mean value than the GS 12, and GS 13-15 groups ($p<.039$). Refer to Fig. D.16.

Non-whites have a higher level of satisfaction with organizational use of Quality Step Increases (1.09) than whites $[t(342)=4.72, \text{ (} p<.000\text{)}]$. Refer to Fig. D.17.

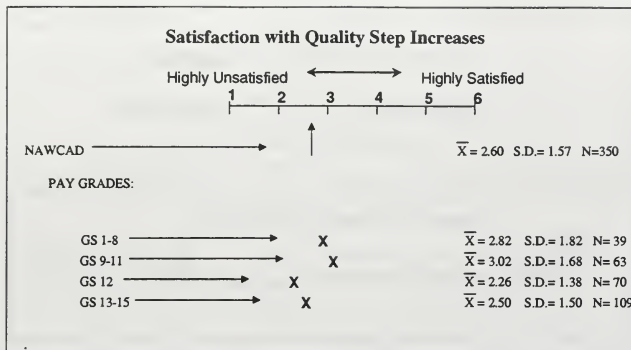


Figure D.16. Satisfaction with Quality Step Increases (Paygrades).

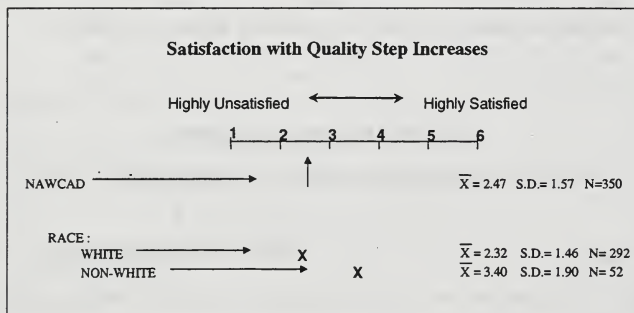


Figure D.17. Satisfaction with Quality Step Increases (Race).

D. DESIRABILITY OF RECOGNITION REWARDS

1. Honorary Recognition

The combined NAWCAD population mean for desirability of Honorary Recognition is 3.92. Females have a higher valuation of honorary recognition (difference = .41) than males [$t(306) = 2.54$, ($p < .000$)]. Refer to Fig. D.18.

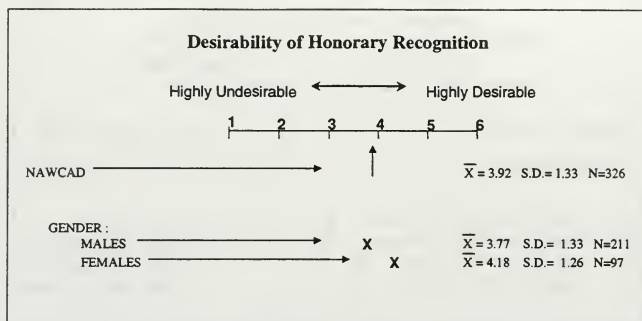


Figure D.18. Desirability of Honorary Recognition (Gender).

Non-whites have a significantly higher valuation of honorary recognition (difference = .56) than whites [$t(319)=2.70$, ($p<.000$)]. Refer to Fig. D.19.

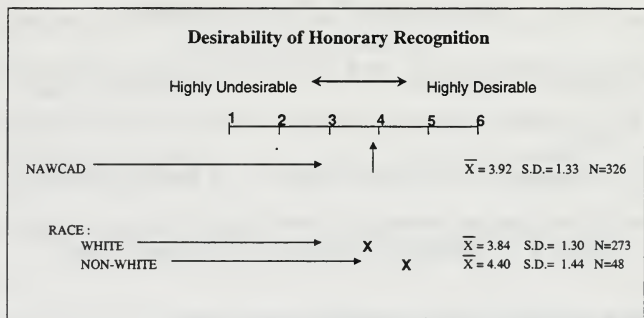


Figure D.19. Desirability of Honorary Recognition (Race).

Among paygrades, the ANOVA results are: [$F(4,324)=3.158$ ($p<.014$)]. The mean for the GS 12 group has a statistically significant lower value ($p<.019$) than the means for all other GS levels, but does not have a statistically significant difference from

the FWS group. All groups, except GS 12 do not have statistically significant differences in means. Refer to Fig. D.20.

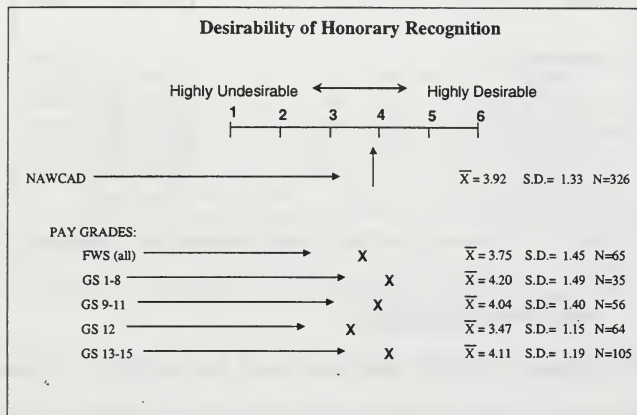


Figure D.20. Desirability of Honorary Recognition (Paygrades).

2. Large Public Recognition

The combined NAWCAD population mean for desirability of Large Public Recognition is 3.33. For paygrades, the ANOVA results are: $[F(4,324)=2.445 (p<.05)]$. The mean for the GS 1-8 group has a statistically significant lower value ($p<.015$) than the mean for GS 13-15. The GS 1-8 group does not have a statistically significant difference from the remaining groups. The GS 13-15 group has the highest rating on this item, with a statistically significant higher mean value than the FWS, GS 1-8, and GS 12 groups ($p<.036$). The GS 13-15 group does not have a statistically significant difference from the GS 9-11 group. Refer to Figure D.21.

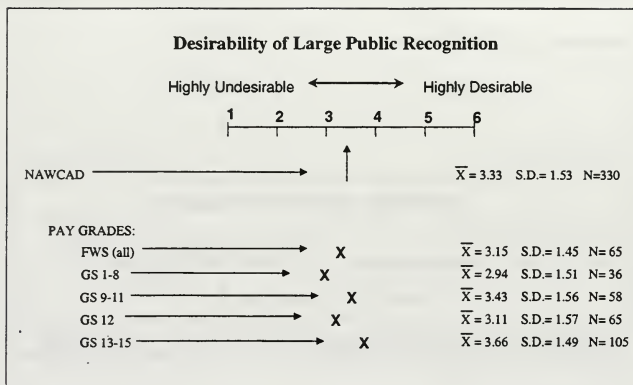


Figure D.21. Desirability of Large Public Recognition (Paygrades).

3. Small Public Recognition

The combined NAWCAD population mean for desirability of Small Public Recognition is 3.65. For age groups, the ANOVA results are: $[F(5,324)=2.252$ ($p<.05$)]. The oldest employees (group 6) have the lowest mean, with a statistically significant lower value ($p<.006$) than the means for the two youngest employee groups (1 and 2). There are no other statistically significant group differences on preferences for small public recognition. Refer to Fig. D.22.

For seniority groups, the ANOVA results are: $[F(5,327)=2.547$ ($p<.028$)]. Group 5 (20-25yrs) has the lowest mean, significantly lower ($p<.004$) than the means for the two most junior groups (1 and 2). There are no other statistically significant between group differences. Refer to Fig. D.23.

Females have a higher valuation of Small Public Recognition (difference = .45) than males [$t(316)=2.65$, ($p<.009$)]. Refer to Fig. D.24.

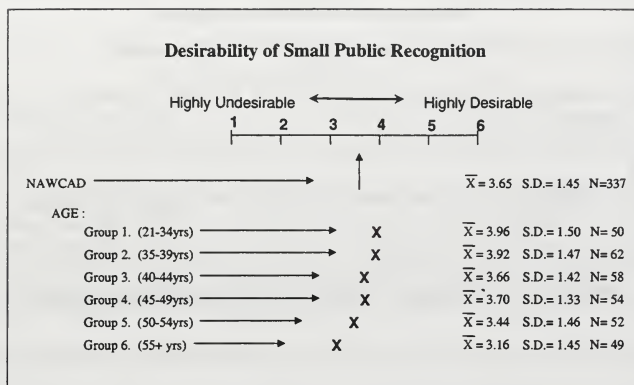


Figure D.22. Desirability of Small Public Recognition (Age groups).

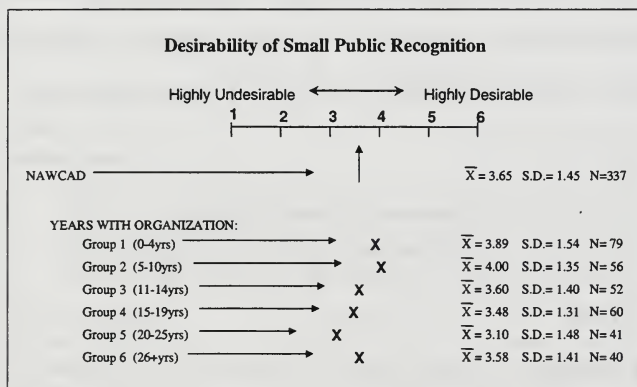


Figure D.23. Desirability of Small Public Recognition (Seniority groups).

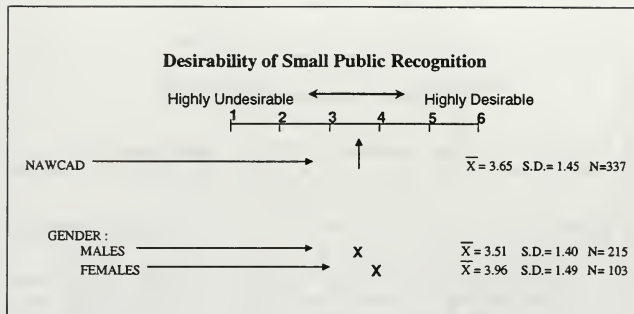


Figure D.24. Desirability of Small Public Recognition (Gender).

4. Private Recognition

The combined NAWCAD population mean for desirability of Private Recognition is 3.73. Only one of the demographic factors showed significant differences in the value of Private Recognition. Females have a higher valuation of Private Recognition (difference = .38) than males [$t(315) = 2.16, (p < .032)$]. Refer to Figure D.25.

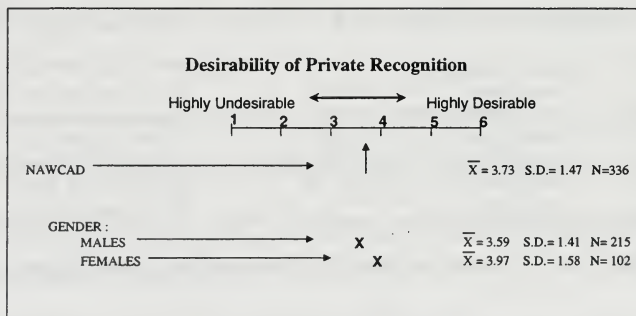


Figure D.25. Desirability of Private Recognition (Gender).

5. Employee of the Month, Year, Quarter, etc.

The combined NAWCAD population mean for desirability of Employee of the Month awards is 2.99. For paygrades, the ANOVA results are: $[F(4,333)=4.017$ ($p<.003$)]. The mean for the GS 12 group has a statistically significant lower value ($p<.013$) than the means for FWS, GS 1-8, and GS 9-11 groups. The GS 12 group does not have a statistically significant difference from the GS 13-15 group. The GS 9-11 group has the highest rating on this item, with a statistically significant higher mean value than the GS 12 and GS 13-15 groups ($p<.019$). The GS 9-11 group does not have a statistically significant difference from the FWS and GS 1-8 groups. Refer to Fig. D.26.

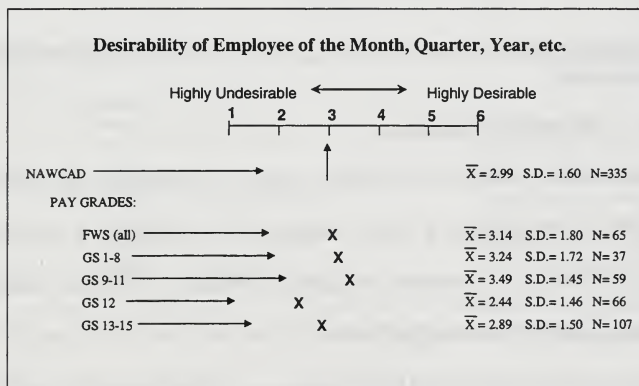


Figure D.26. Desirability of Employee of the Month, Quarter, Year, etc. (Paygrades).

Non-whites have a higher valuation of Employee of the Month Awards (difference = .62) than whites [$t(328)=2.53$, ($p<.012$)]. Refer to Fig. D.27.

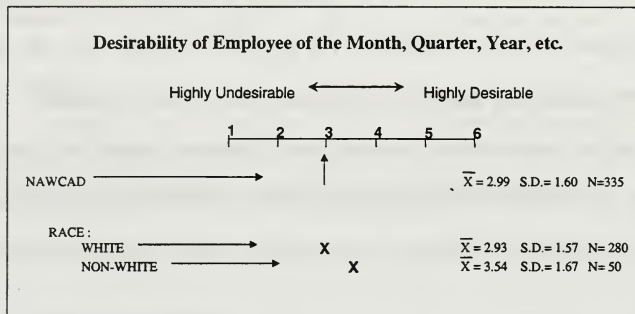


Figure D.27. Desirability of Employee of the Month, Quarter, Year, etc. (Race).

E. SATISFACTION WITH ORGANIZATIONAL USE OF RECOGNITION REWARDS

1. Honorary Recognition

The combined NAWCAD population mean for satisfaction with organizational use of Honorary Recognition is 3.01. Patuxent River, MD has a higher level of satisfaction with the use of Honorary Recognition (difference = .39) than Lakehurst, NJ [$t(333)=2.60$, ($p<.010$)]. Refer to Fig. D.28.

Among Competencies, the ANOVA results are: [$F(6,326)= 2.614$ ($p<.017$)]. The mean for Competency Five has a statistically significant lower value ($p<.041$) than the means for competencies One, Two, Three, Four, and Seven. Competency Five does not have a statistically significant difference form Competency Eight. Refer to Fig. D.29.

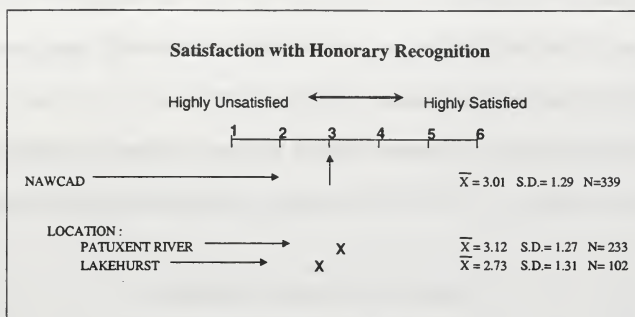


Figure D.28. Satisfaction with Honorary Recognition (Location).

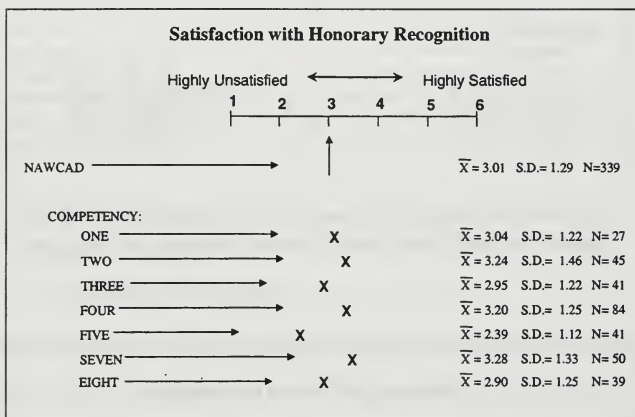


Figure D.29. Satisfaction with Honorary Recognition (Competencies).

For paygrades, the ANOVA results are: $[F(4,336)=5.636 (p<.000)]$. The mean for the FWS group has a statistically significant lower value ($p<.031$) than the means for GS 9-11, GS 12, and GS 13-15 groups. The FWS group does not have a statistically significant difference from the GS 1-8 group. The GS 9-11 group has the highest rating

on this item, with a statistically significant higher mean value than the FWS and GS 12 groups ($p<.021$). The GS 9-11 group does not have a statistically significant difference from the GS 1-8 and GS 13-15 groups. Refer to Fig. D.30.

Non-whites have a higher level of satisfaction with the use of Honorary Recognition (difference = .57) than whites [$t(331)=2.92$, ($p<.004$)]. Refer to Fig. D.31.

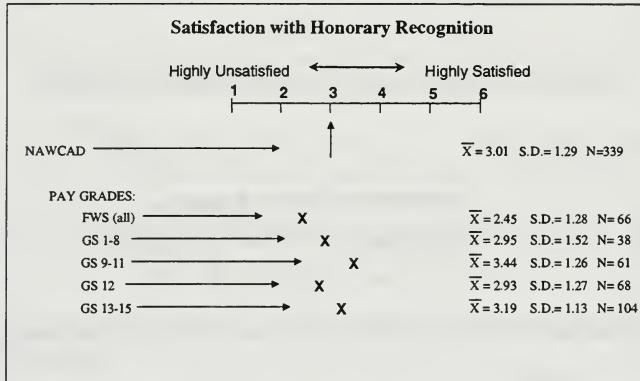


Figure D.30. Satisfaction with Honorary Recognition (Paygrades).

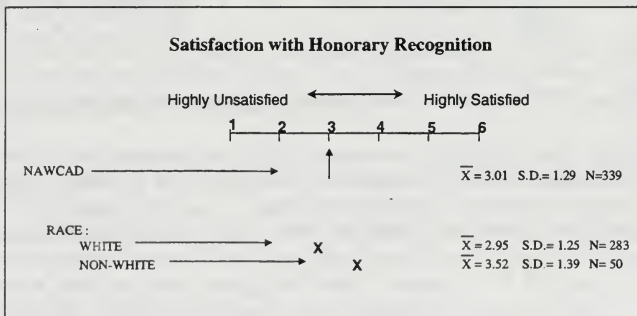


Figure D.31. Satisfaction with Honorary Recognition (Race).

For job-type groups, the ANOVA results are: $[F(2,328)=9.448 \text{ (} p<.000\text{)}]$. The Trades/Crafts group (2) has the lowest mean, with a statistically significant lower value ($p<.001$) than the means for both the Administrative/ Clerical and the Engineering/Science groups (1 and 3), which do not have a statistically significant difference between them. Refer to Fig. D.32.

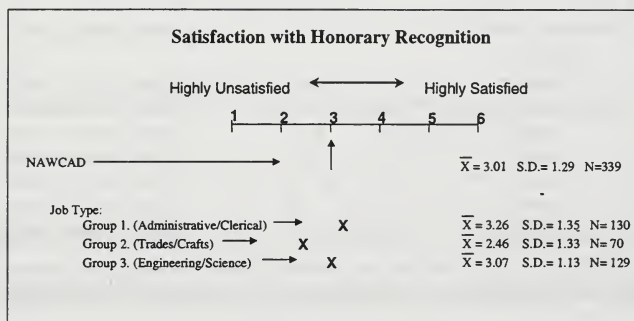


Figure D.32. Satisfaction with Honorary Recognition (Job-type).

2. Large Public Recognition

The combined NAWCAD population mean for satisfaction with organizational use of Large Public Recognition is 2.93. For competencies, the ANOVA results are: $[F(6,332)= 2.479 \text{ (} p<.023\text{)}]$. The mean for Competency Five has a statistically significant lower value ($p<.029$) than the means for Competencies Two, Four, and Seven. Competency Five does not have a statistically significant difference from Competencies One, Three and Eight. Competency Two has the highest rating on this item, with a statistically significant higher mean value than Competencies Three, Five, and Eight

($p < .043$). Competency Two does not have a statistically significant difference from Competencies One, Four, and Seven. Refer to Fig. D.33.

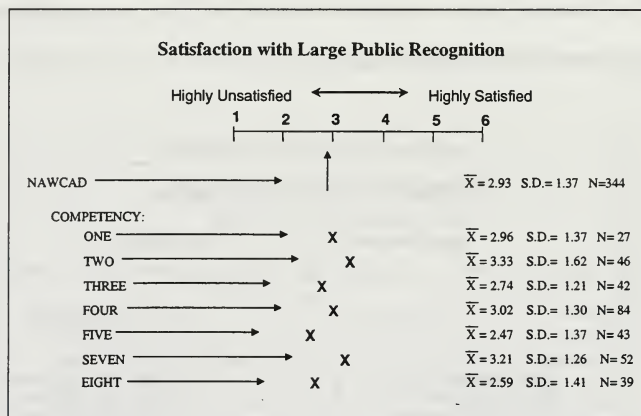


Figure D.33. Satisfaction with Large Public Recognition (Competencies).

For paygrades, the ANOVA results are: $[F(4,341)=4.706$ ($p < .001$)]. The mean for the FWS group has a statistically significant lower value ($p < .039$) than the mean for all other groups. The GS 9-11 group has the highest rating on this item, with a statistically significant higher mean value than the FWS and GS 12 groups ($p < .042$). Refer to Fig. D.34.

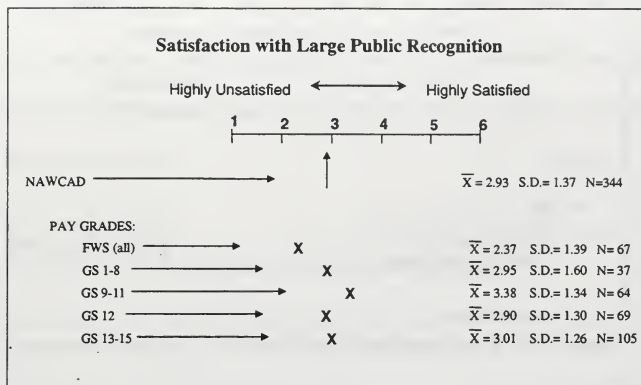


Figure D.34. Satisfaction with Large Public Recognition (Paygrades).

Females have a higher level of satisfaction with organizational use of Large Public Recognition (difference = .36) than males [$t(322)=2.18$, ($p<.030$)]. Refer to Fig. D.35.

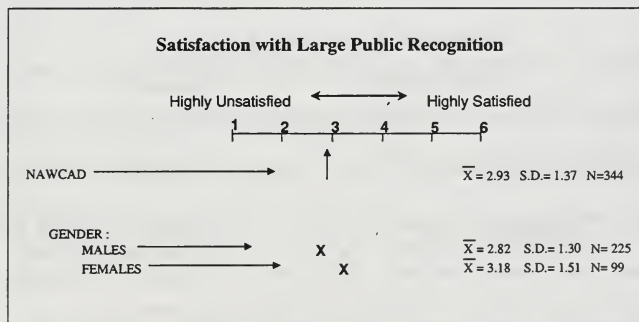


Figure D.35. Satisfaction with Large Public Recognition (Gender).

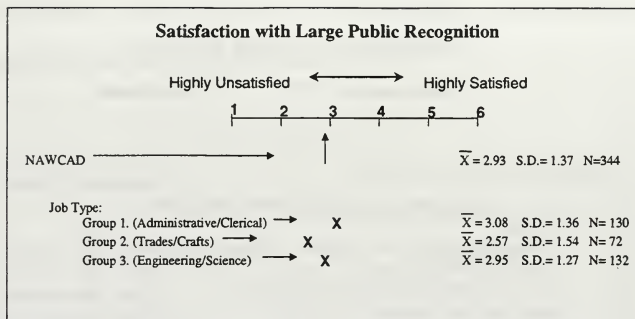


Figure D.36. Satisfaction with Large Public Recognition (Job-type).

3. Small Public Recognition

The combined NAWCAD population mean for satisfaction with organizational use of Small Public Recognition is 3.12. Patuxent River, MD has a higher level of satisfaction with organization use of Small Public Recognition (difference = .51) than Lakehurst, NJ [$t(343)=3.09$, ($p<.002$)]. Refer to Fig. D.37.

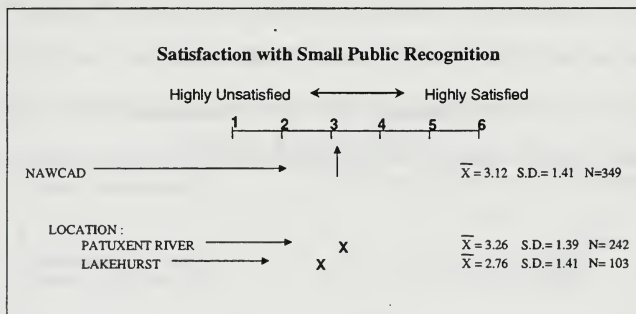


Figure D.37. Satisfaction with Small Public Recognition (Location).

For competencies, the ANOVA results are: $[F(6,336)= 2.238 (p<.039)]$. Competency Two has the highest rating on this item, with a statistically significant higher mean value than Competencies Three, Five, and Eight ($p<.008$). Refer to Fig. D.38.

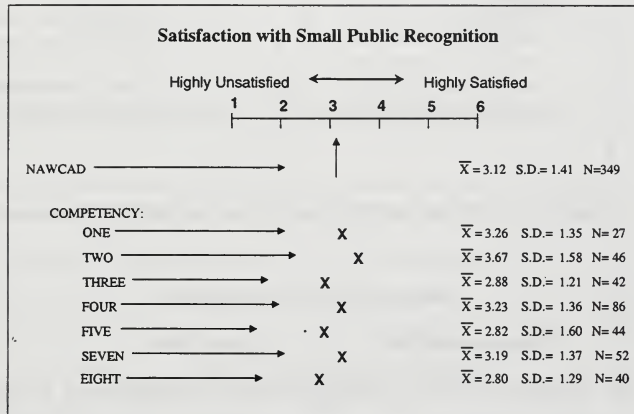


Figure D.38. Satisfaction with Small Public Recognition (Competencies).

Among paygrades, the ANOVA results are: $[F(4,346)=5.127 (p<.001)]$. The mean for the FWS group has a statistically significant lower value ($p<.000$) than the means for GS 9-11 and GS 13-15 groups. The FWS group does not have a statistically significant difference from the GS 1-8 or GS 12 groups. The GS 9-11 group has the highest rating on this item, with a statistically significant higher mean value than the FWS and GS 12 groups ($p<.01$). The GS 9-11 group does not have a statistically significant difference from the GS 1-8 and GS 13-15 groups. Refer to Fig. D.39.

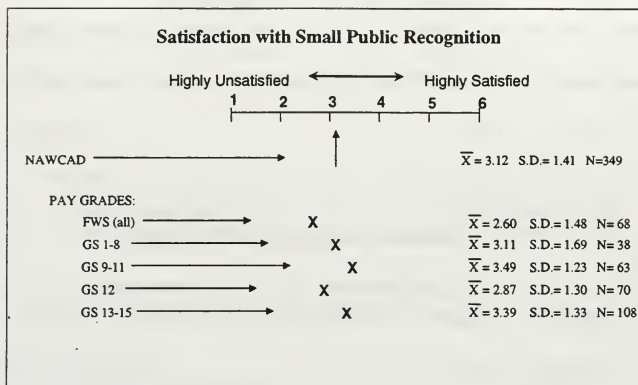


Figure D.39. Satisfaction with Small Public Recognition (Paygrades).

4. Private Recognition

The combined NAWCAD population mean for satisfaction of the organization's use of Private Recognition is 3.25. Patuxent River, MD has a higher level of satisfaction with organizational use of Private Recognition (difference = .42) than Lakehurst, NJ [$t(341)=2.46$, ($p<.015$)]. Refer to Fig. D.40.

For competencies, the ANOVA results are: [$F(6,334)= 2.228$ ($p<.04$)]. Competency Two has the highest rating on this item, with a statistically significant higher mean value than Competencies Three, Four, and Five ($p<.023$). There are no other statistically significant differences. Refer to Fig. D.41.

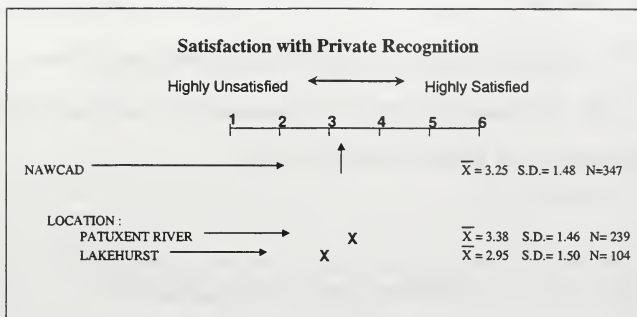


Figure D.40. Satisfaction with Private Recognition (Location).

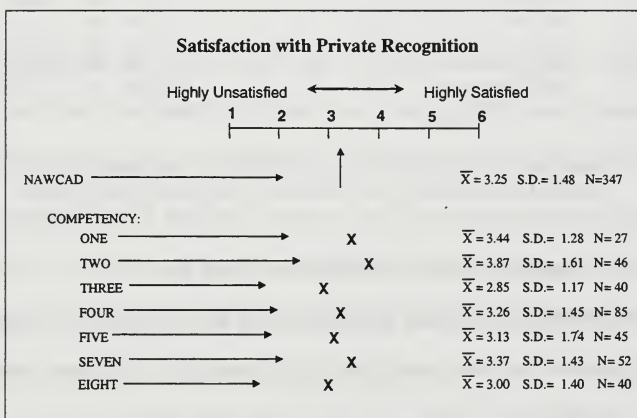


Figure D.41. Satisfaction with Private Recognition (Competencies).

For paygrades, the ANOVA results are: $[F(4,344)=4.467 (p<.002)]$. The mean for the FWS group has a statistically significant lower value ($p<.034$) than the means for GS 1-8, GS 9-11, and GS 13-15 groups. The FWS does not have a statistically significant

difference from the GS 12 group. The GS 13-15 group has the highest rating on this item, with a statistically significant higher mean value than the FWS and GS 12 groups ($p < .007$). The GS 13-15 group does not have a statistically significant difference from the GS 1-8 and GS 9-11 groups. Refer to Fig. D.42.

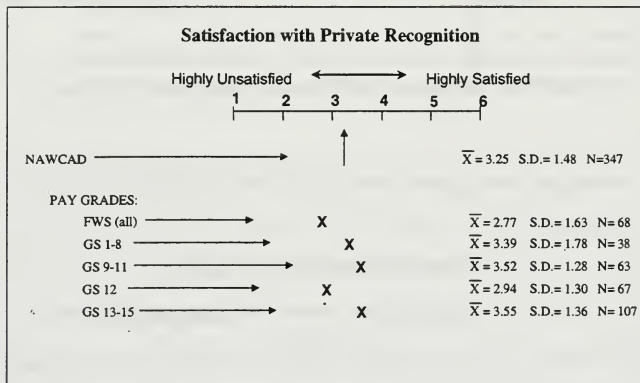


Figure D.42. Satisfaction with Private Recognition (Paygrades).

5. Employee of the Month, Quarter, Year, etc.

The combined NAWCAD population mean for satisfaction with organizational use of Employee of the Month awards is 2.72. Patuxent River, MD has a higher level of satisfaction (difference = .38) than Lakehurst, NJ [$t(339)=2.27$, ($p < .024$)]. Refer to Fig. D.43.

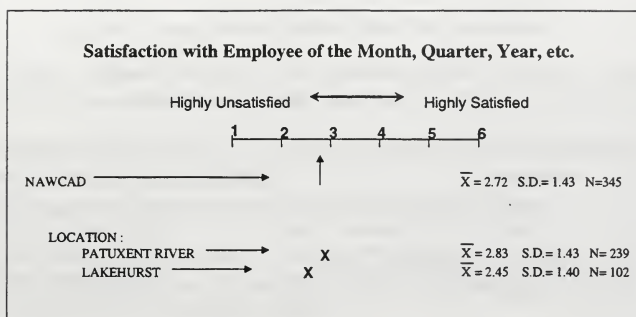


Figure D.43. Satisfaction with Employee of the Month, Quarter, Year, etc. (Location).

For paygrades, the ANOVA results are: $[F(4,342)=2.563 \text{ (} p<.038\text{)}]$. The mean for the FWS group has a statistically significant lower value ($p<.029$) than the means for GS 9-11, and GS 13-15 groups. The FWS group does not have a statistically significant difference from the GS 1-8 and GS 12 groups. The GS 9-11 group has the highest rating on this item, with statistically significant higher mean value than the FWS and GS 12 groups ($p<.038$). The GS 9-11 group does not have a statistically significant difference from the GS 1-8 and GS 13-15 groups. Refer to Fig. D.44.

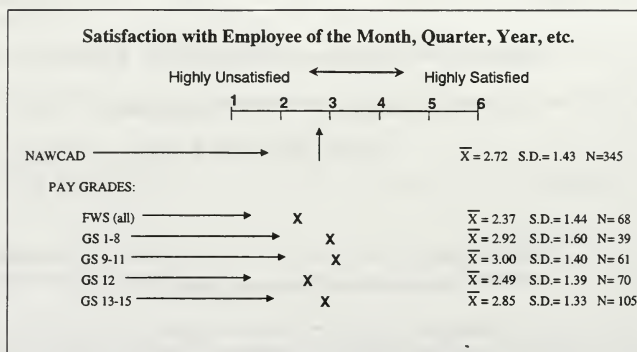


Figure D.44. Satisfaction with Employee of the Month, Quarter, Year, etc. (Paygrades).

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